

PROVO RIVER DELTA RESTORATION PROJECT

Final Environmental Impact Statement

Volume II: Appendices



April 2015

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION



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(Volume I Bound Separately)

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PROVO RIVER DELTA RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix A: Large Size Figures and Maps



Figure A-1

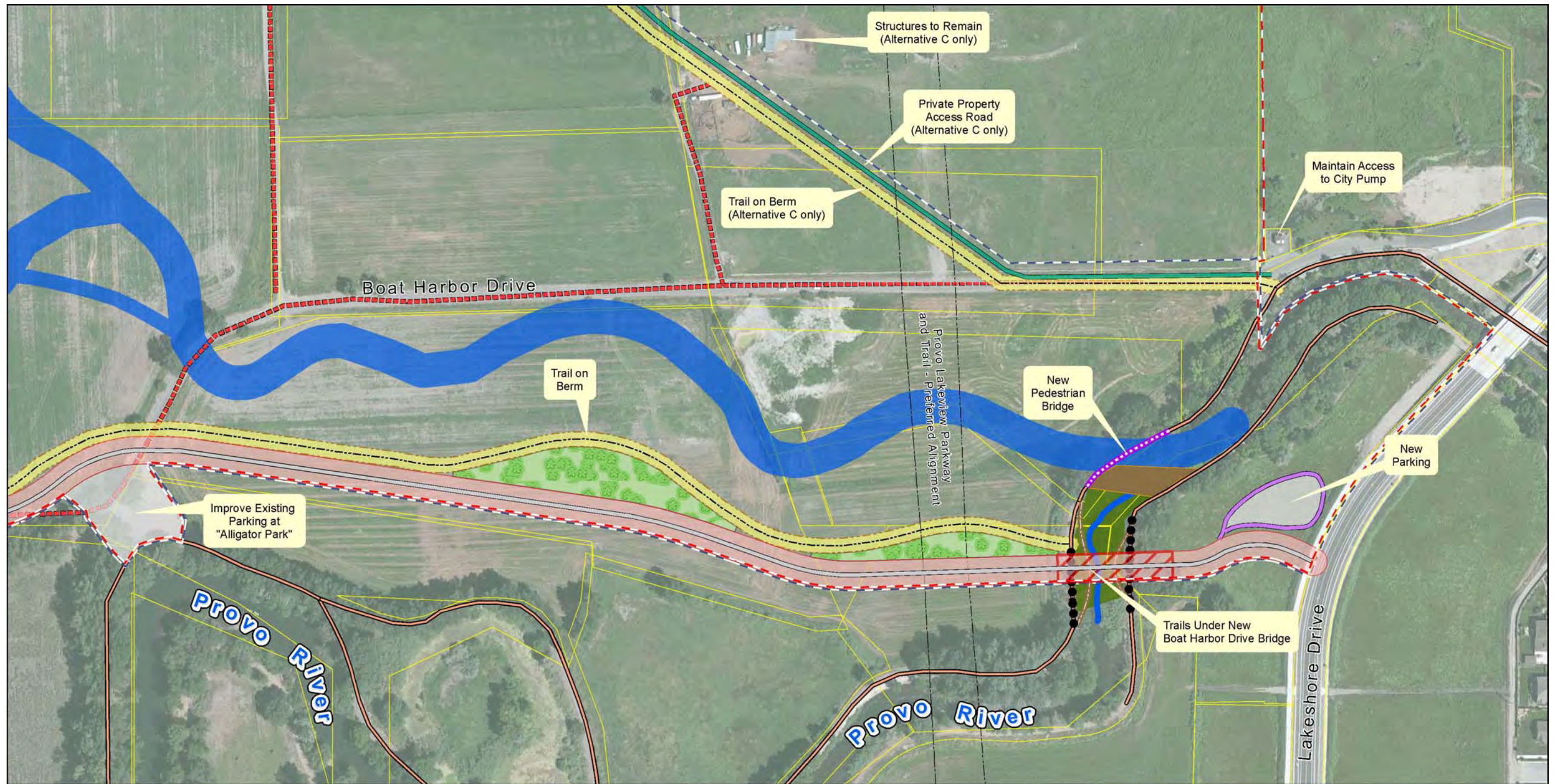


Figure A-2



Figure A-3



<p>Map Date: 2/10/2015 Base Map: Air Photo courtesy ESRI, Summer 2011 Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 US Feet Vertical Datum: National Geodetic Vertical Datum of 1929</p>	<p>Restoration Features</p> <ul style="list-style-type: none"> Proposed Provo River Course Small Channel in Riparian Meadow New Berm Acquisition Boundary Alt. A Acquisition Boundary Alt. C Small Dam with Outlet Riparian Wet Meadow with Small Channel Cottonwood Tree Planting Along New Trail Parcel Boundaries 	<p>Recreation Features</p> <ul style="list-style-type: none"> Existing Trail Existing Trail Relocation New Trail Connection New Trail on Berm New Pedestrian Bridge New River Access 	<p>Road Features</p> <ul style="list-style-type: none"> Boat Harbor Drive Centerline Property Access Road Realignment Remove Existing Road New Harbor Drive Alignment ROW New Harbor Drive Bridge New or Improved Parking 	<p>PROVO RIVER DELTA RESTORATION PROJECT Diversion Area Close-Up Map With Alternative B Features</p>
	<p>Callouts on map: Trail on Berm, Boat Harbor Drive, Structures would be Removed, New Trail Along Boat Harbor Drive, Provo Lakeview Parkway and Trail - Preferred Alignment, New Pedestrian Bridge, Maintain Access to City Pump, Small Diversion Dam with Outlet for Existing Channel, Trails Under New Boat Harbor Drive Bridge, New Parking, Lakeshore Drive, Provo River.</p>			

Figure A-4

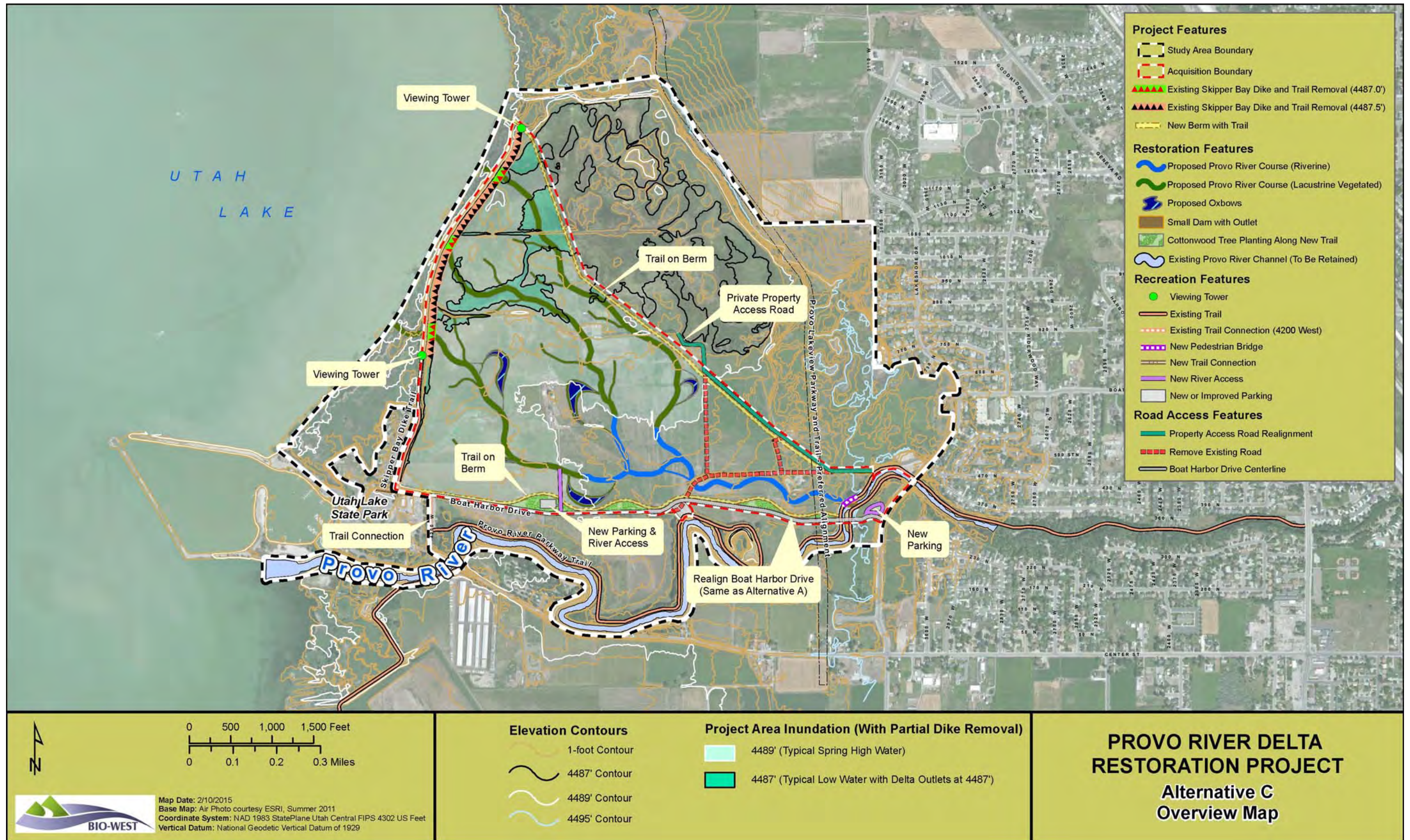


Figure A-5

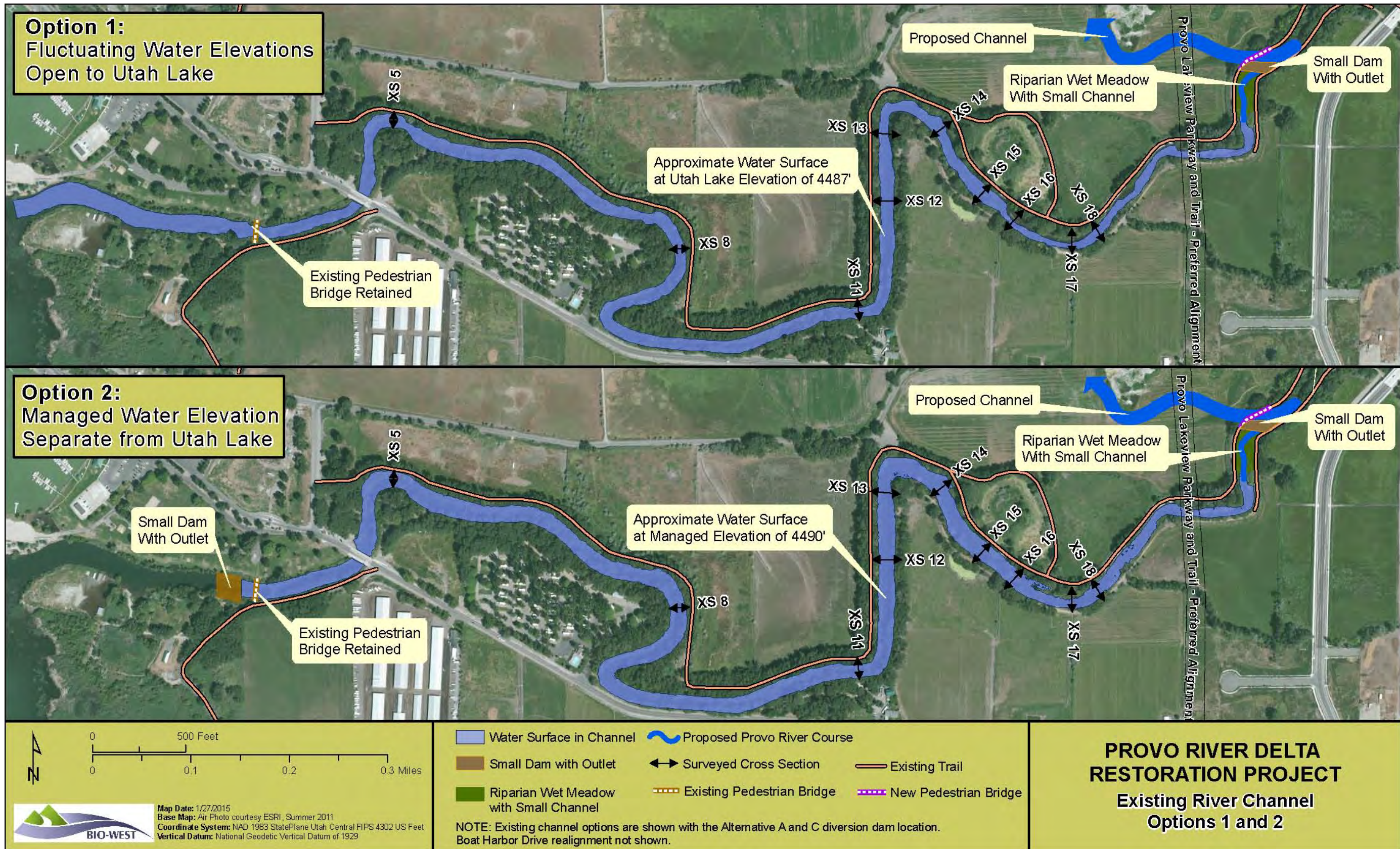


Figure A-6

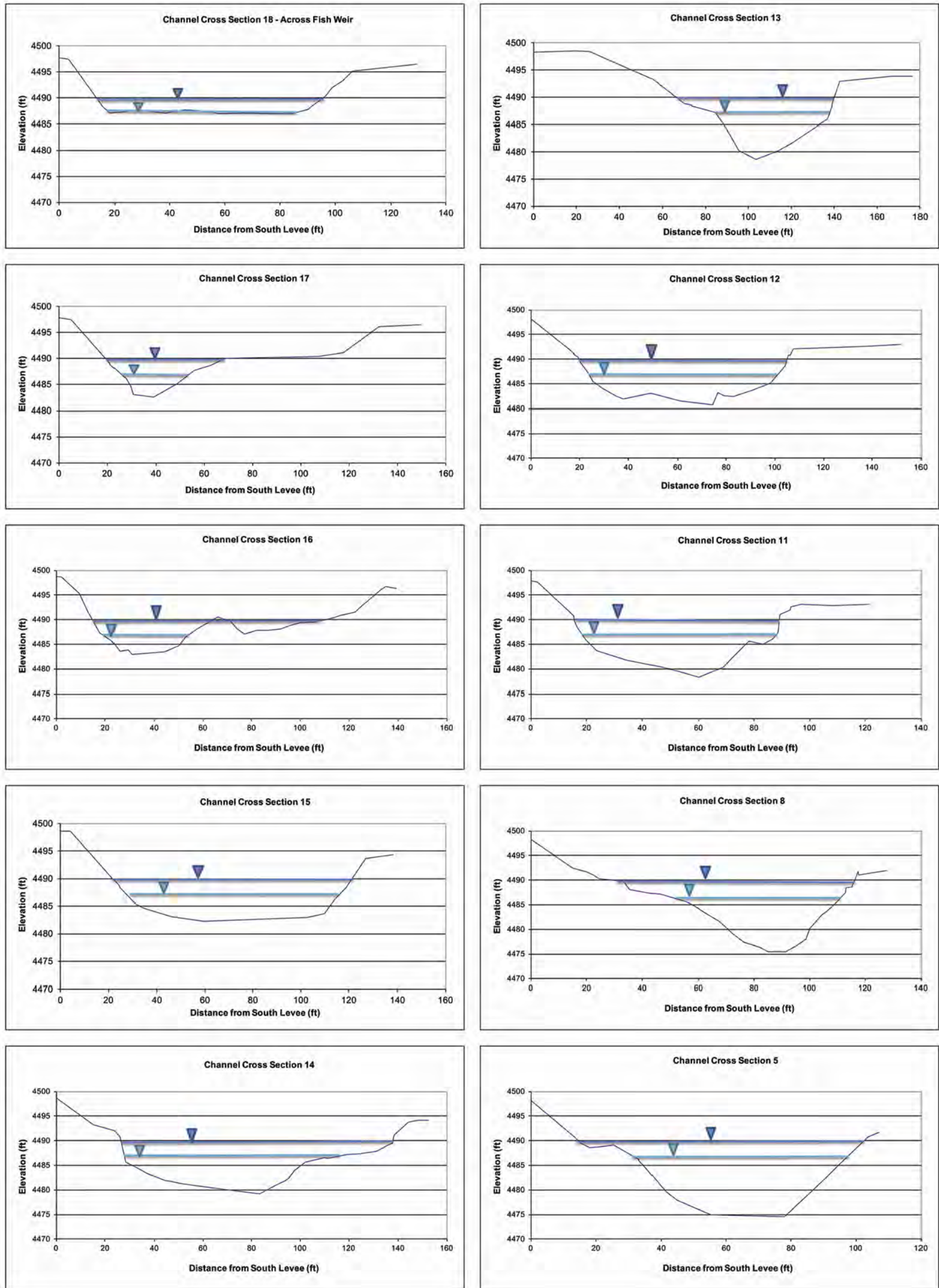
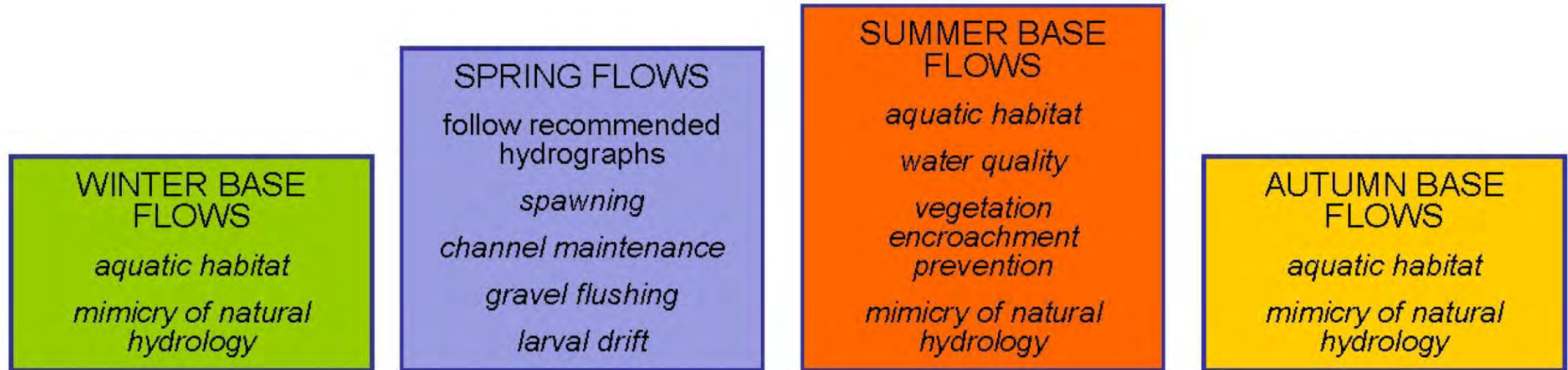
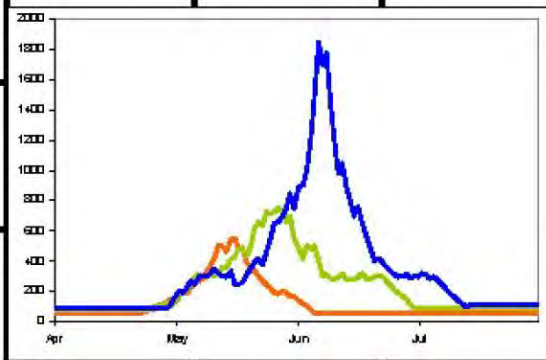


Figure A-7 Cross section views at 10 locations in the portion of Lower Provo River influenced by Utah Lake. These graphs show the water surface width when Utah Lake is at 4487' (Option 1) and 4490' (Option 2). The water surface is on average 20' wider at 4490' (Option2) compared to 4487' (Option 1), a 41% difference.

Lower Provo River Base Flow Guidelines

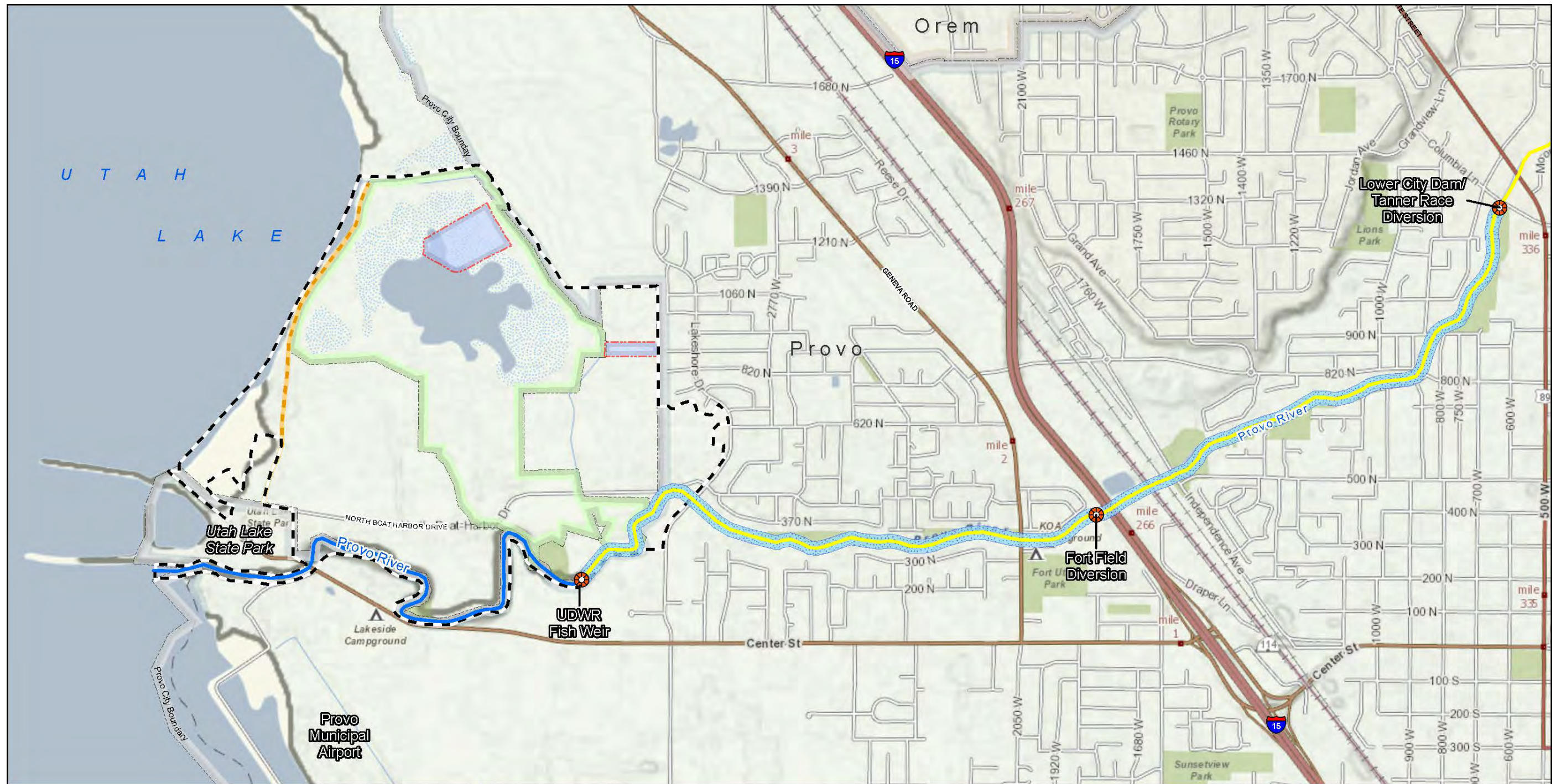


provide year-to-year variability	DRY YEAR	59 cfs					57 cfs			67 cfs		
	MODERATE YEAR	78 cfs					86 cfs			86 cfs		
	WET YEAR	83 cfs					113 cfs			100 cfs		
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV



provide seasonal variability

Figure A-8



	Baseline Study Area	Existing Dams and Diversions
	Despain Ranch and Bird Refuge	Lower Provo River
Existing Wetland Mitigation Sites	Provo River - Utah Lake Interface	Existing June Sucker Spawning Habitat
Municipal Boundaries	Skipper Bay Dike	

PROVO RIVER DELTA RESTORATION PROJECT

Study Area Context



Map Date: 2/7/2014 11:58:04 AM
 Base Map: AGRC Terrain Basemap Service
 Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 US Feet
 Vertical Datum: National Geodetic Vertical Datum of 1929

Figure A-9

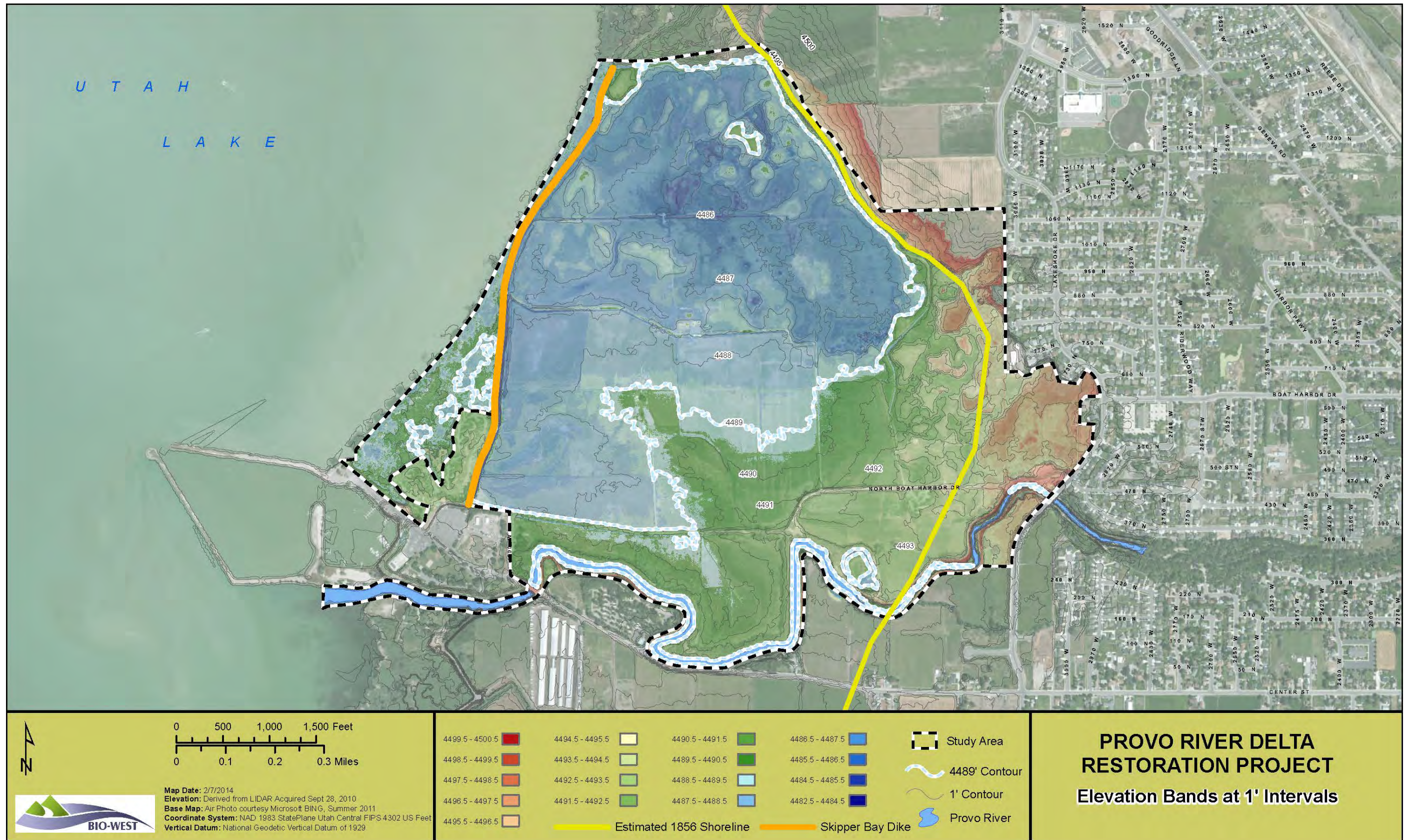


Figure A-10

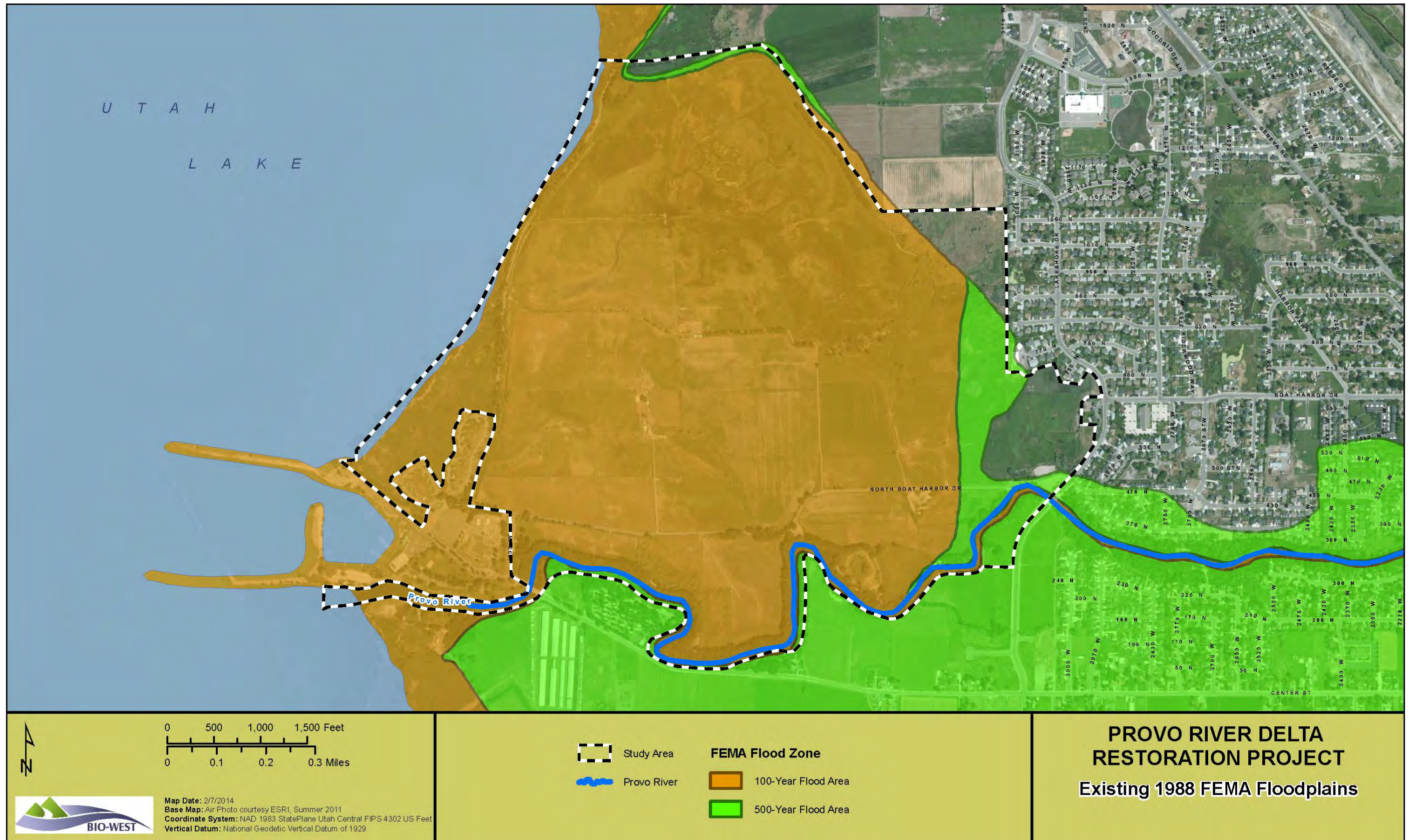


Figure A-11

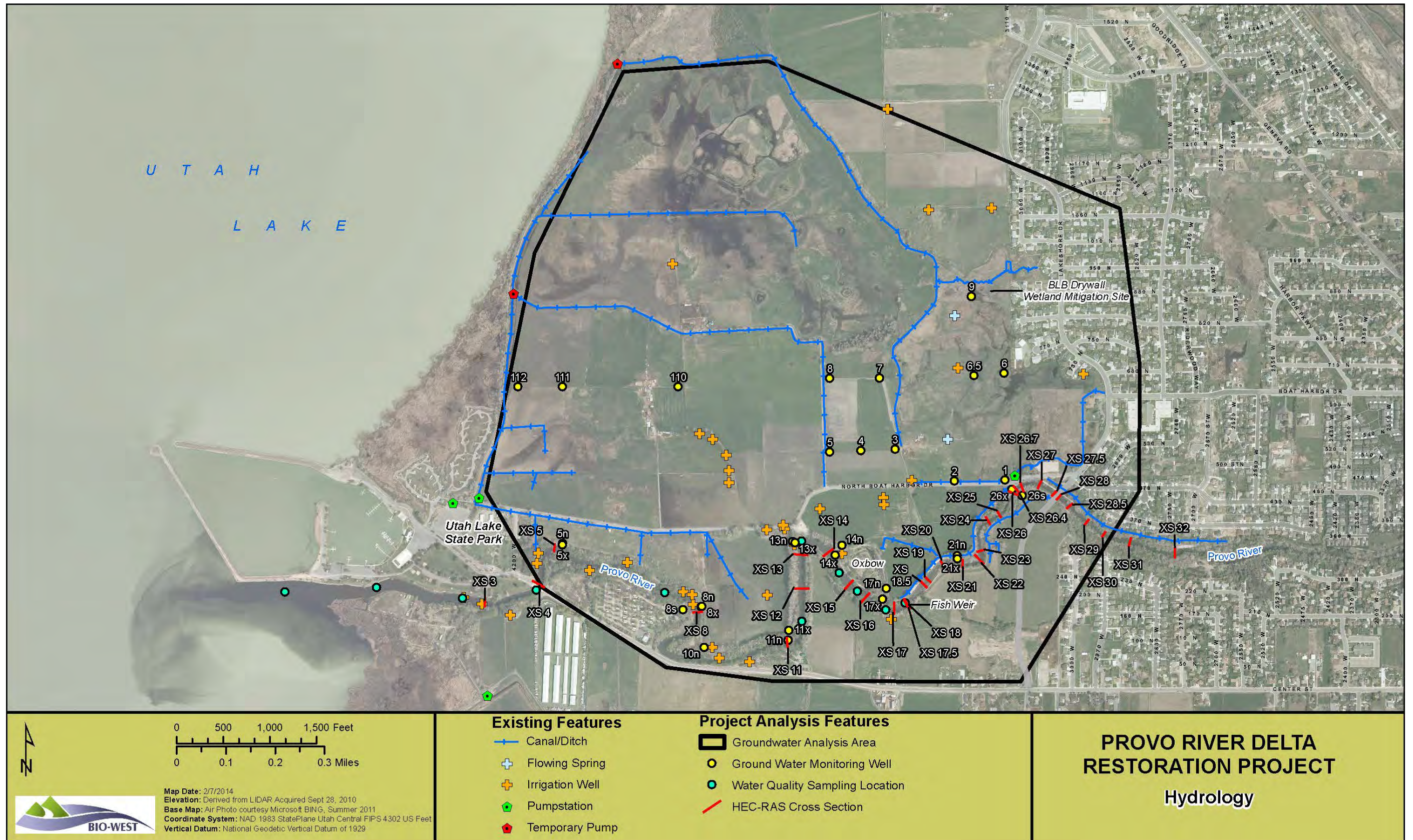


Figure A-12

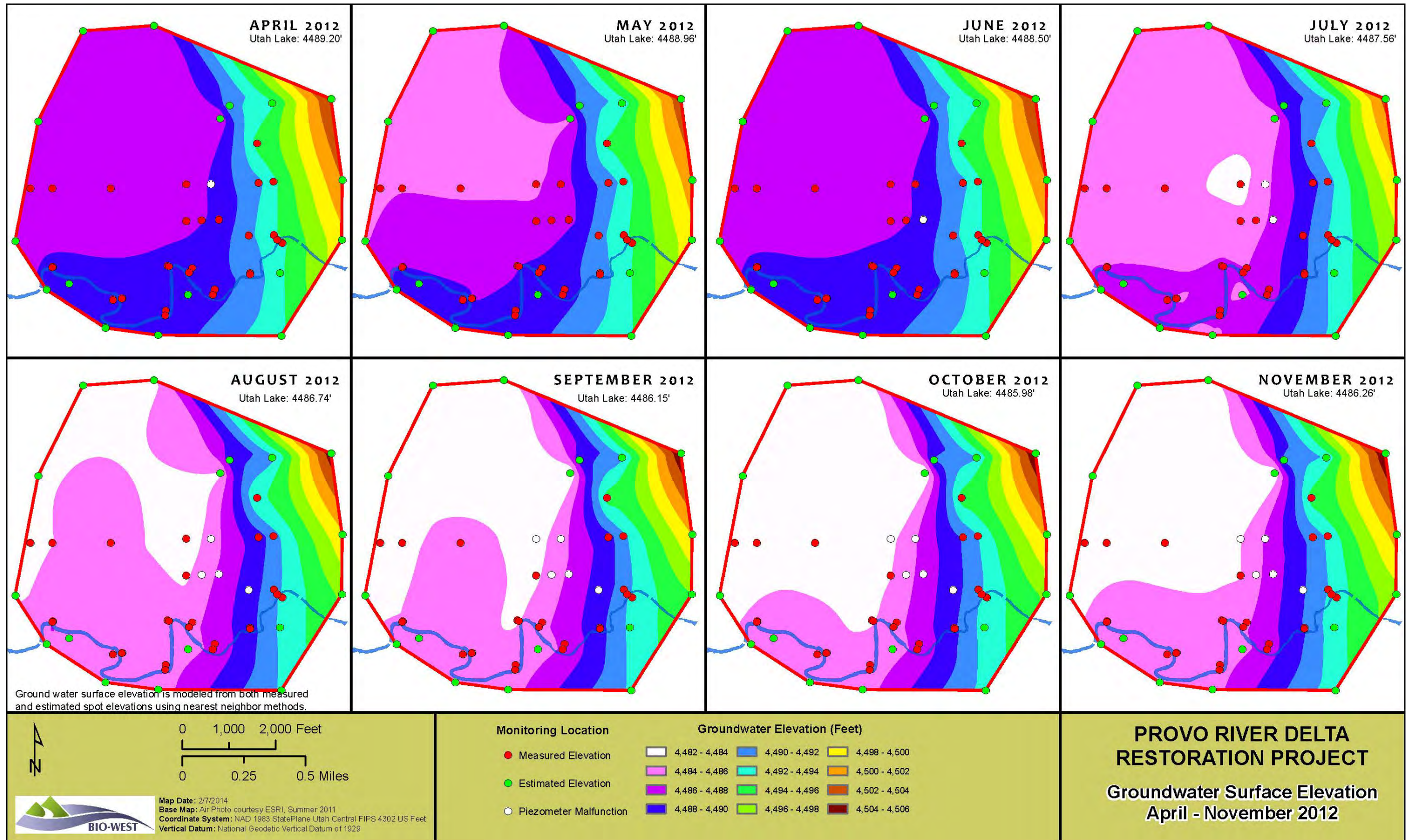


Figure A-13

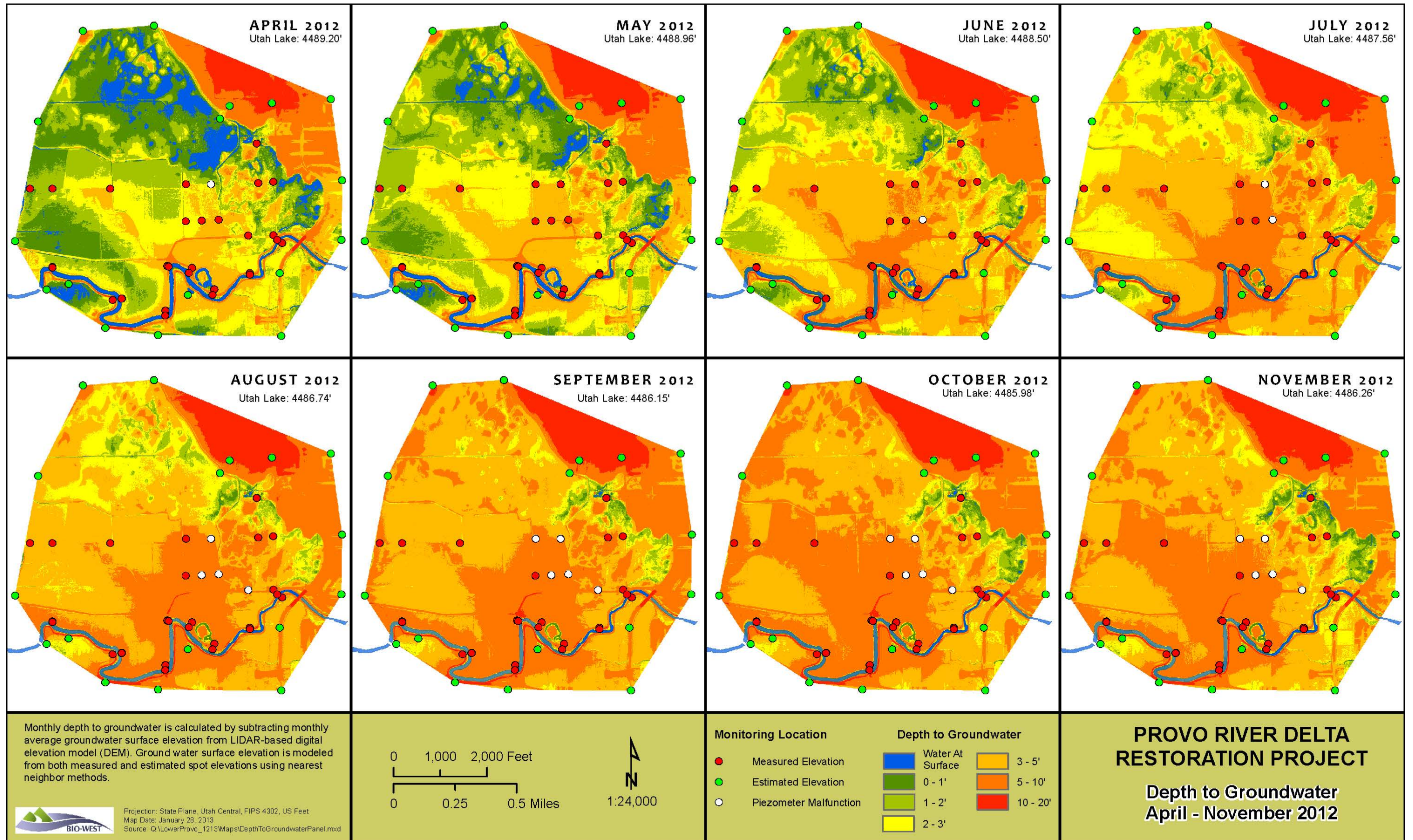


Figure A-14

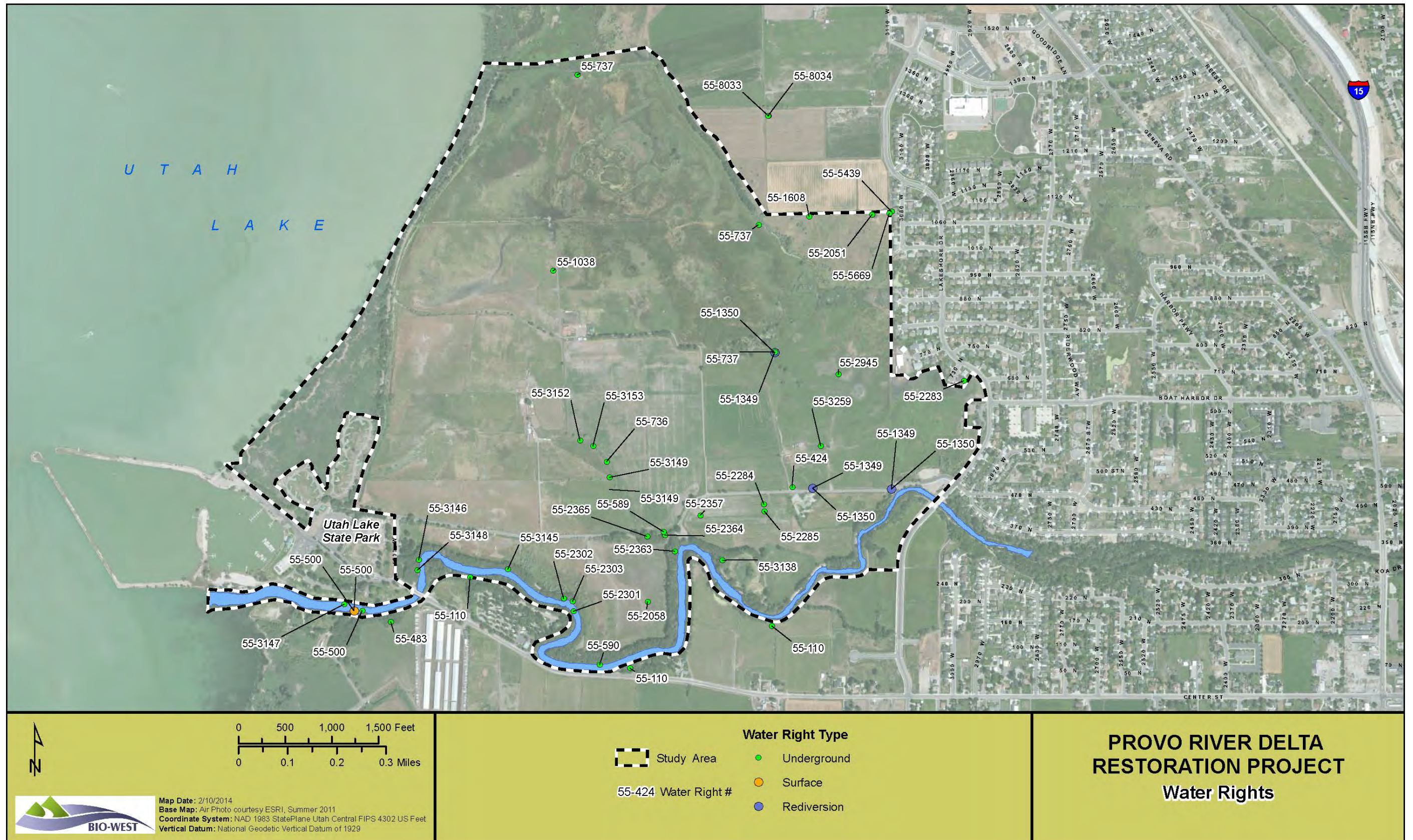
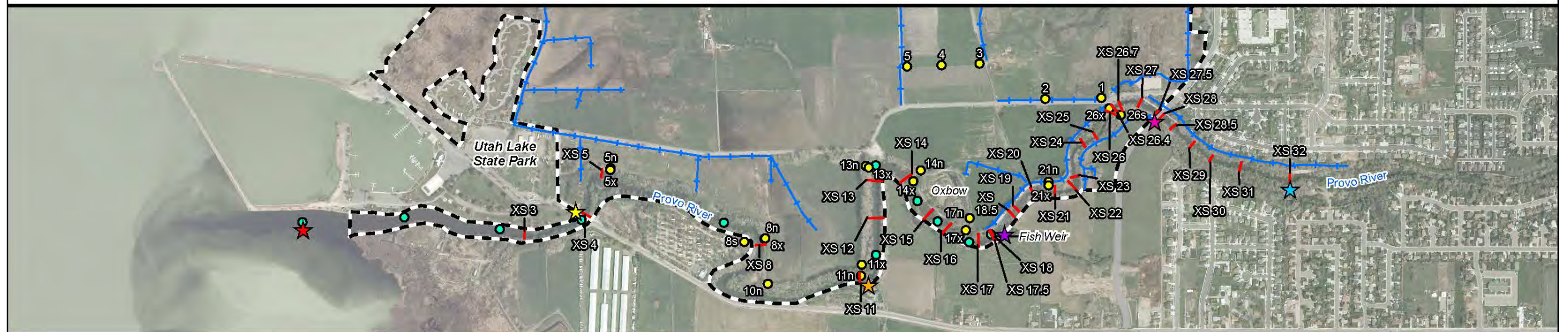
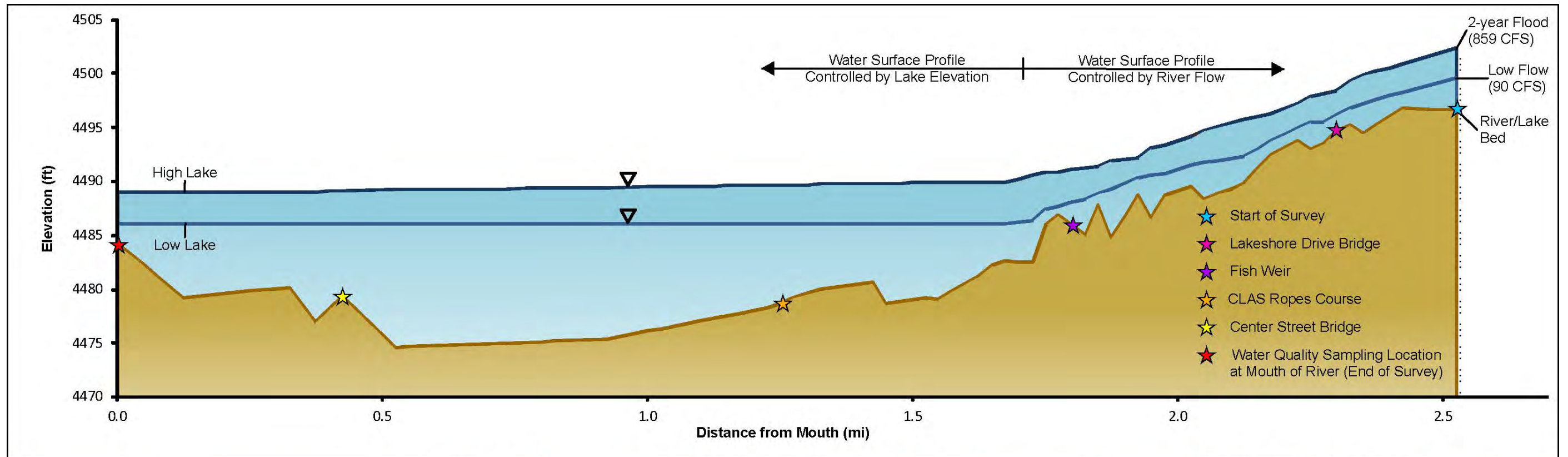


Figure A-15



0 500 1,000 1,500 Feet

0 0.1 0.2 0.3 Miles

- Study Area
- Canal/Ditch
- HEC-RAS Cross Section

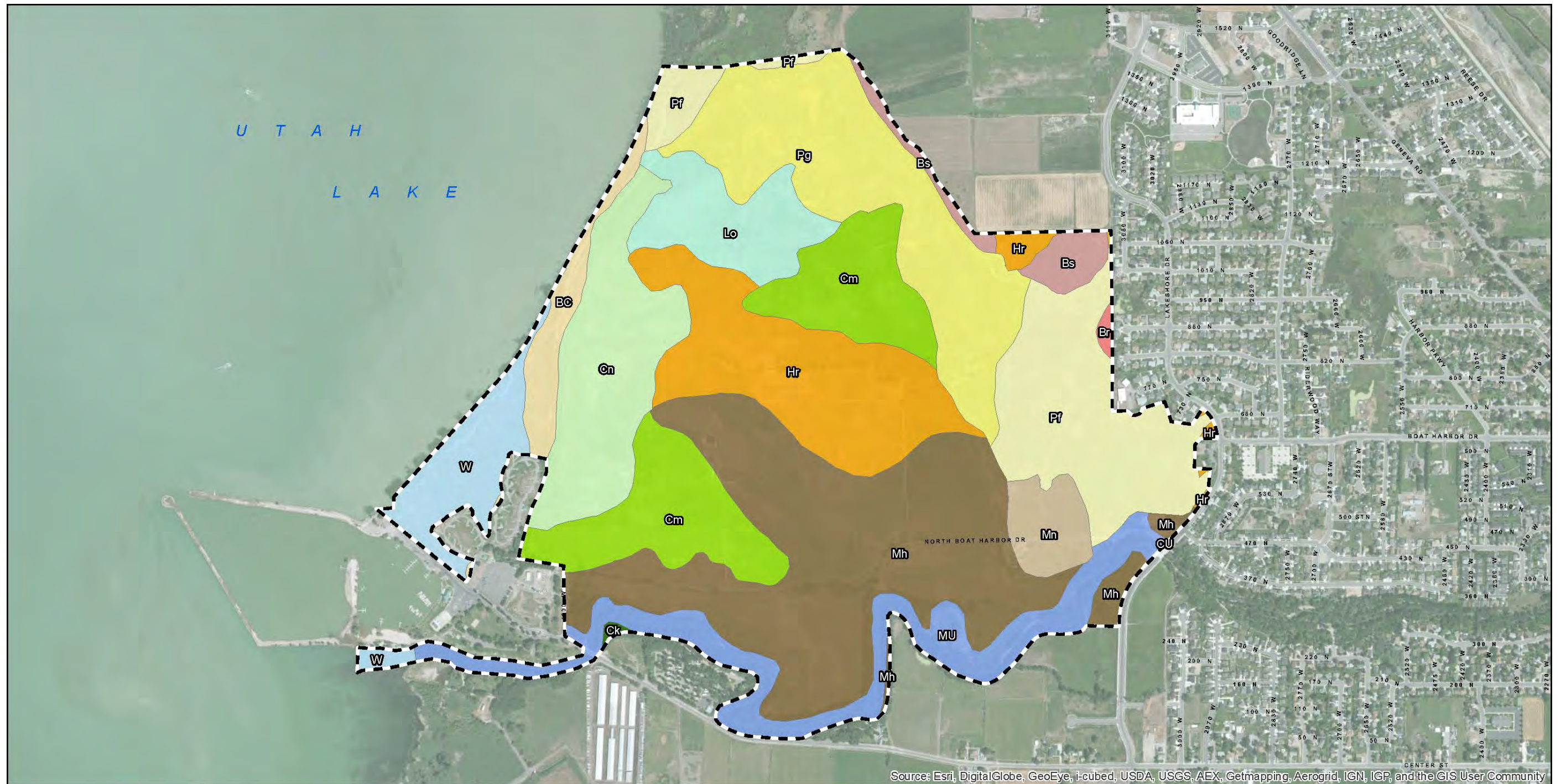
- Ground Water Monitoring Well
- Water Quality Sampling Location

**PROVO RIVER DELTA
RESTORATION PROJECT**

**Existing Channel
Longitudinal Profile**

Map Date: 2/7/2014
 Base Map: Air Photo courtesy ESRI, Summer 2011
 Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 US Feet
 Vertical Datum: National Geodetic Vertical Datum of 1929

Figure A-16




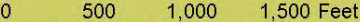

















		Map Symbol - Map Unit Name			 Study Area	PROVO RIVER DELTA RESTORATION PROJECT NRCS Soil Survey
		 BC - Beaches  Br - Bramwell silty clay loam  Bs - Bramwell silty clay loam, drained  Ck - Chipman silty clay loam  Cm - Chipman silty clay loam, moderately deep water table	 Cn - Chipman silty clay loam, moderately saline  CU - Cobbly alluvial land  Hr - Holdaway silt loam  Lo - Logan silty clay loam  Mh - McBeth silt loam	 Mn - McBeth silt loam, moderately saline  MU - Mixed alluvial land  Pf - Peteetneet peat  Pg - Peteetneet-Holdaway complex  W - Water		

Figure A-17

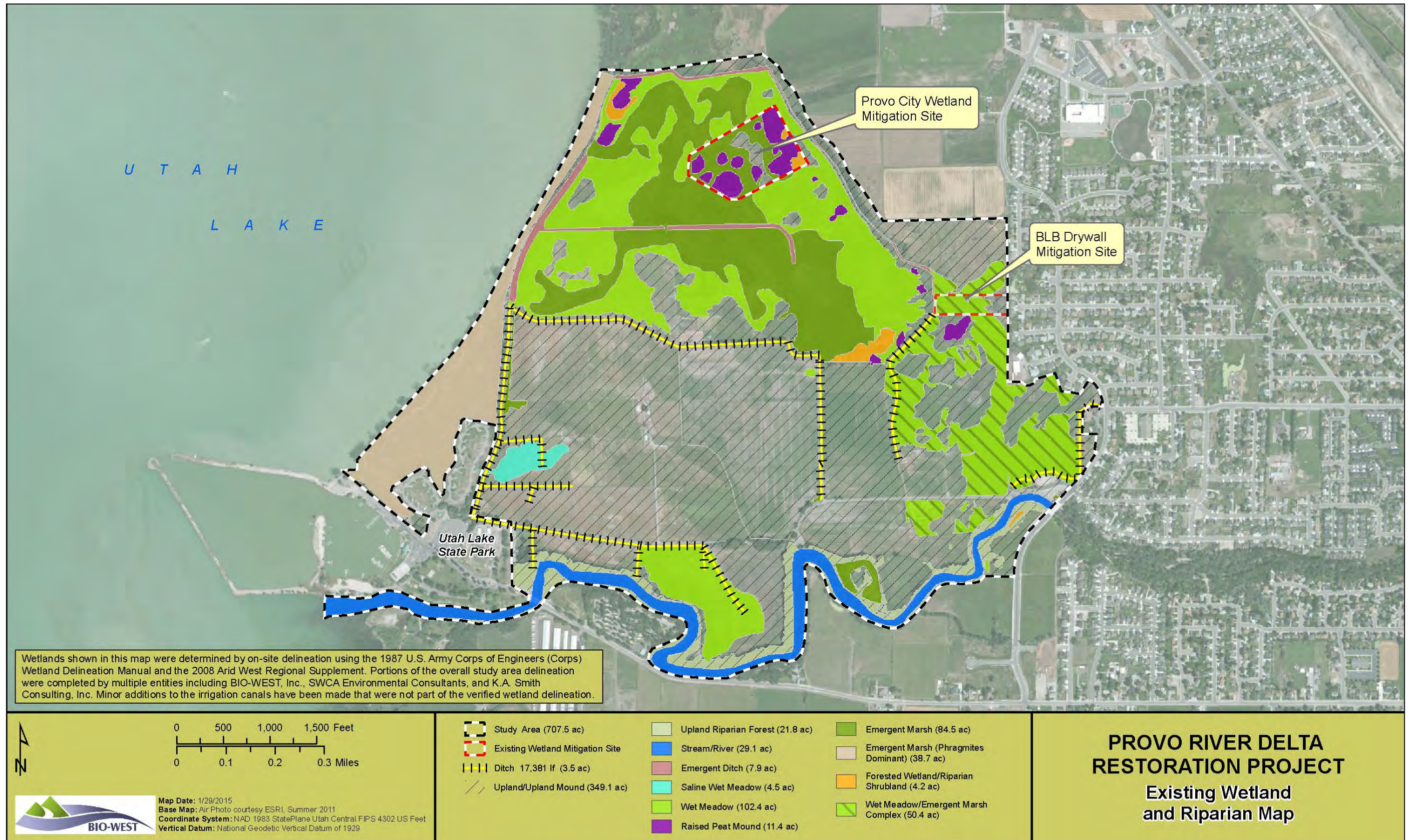


Figure A-18

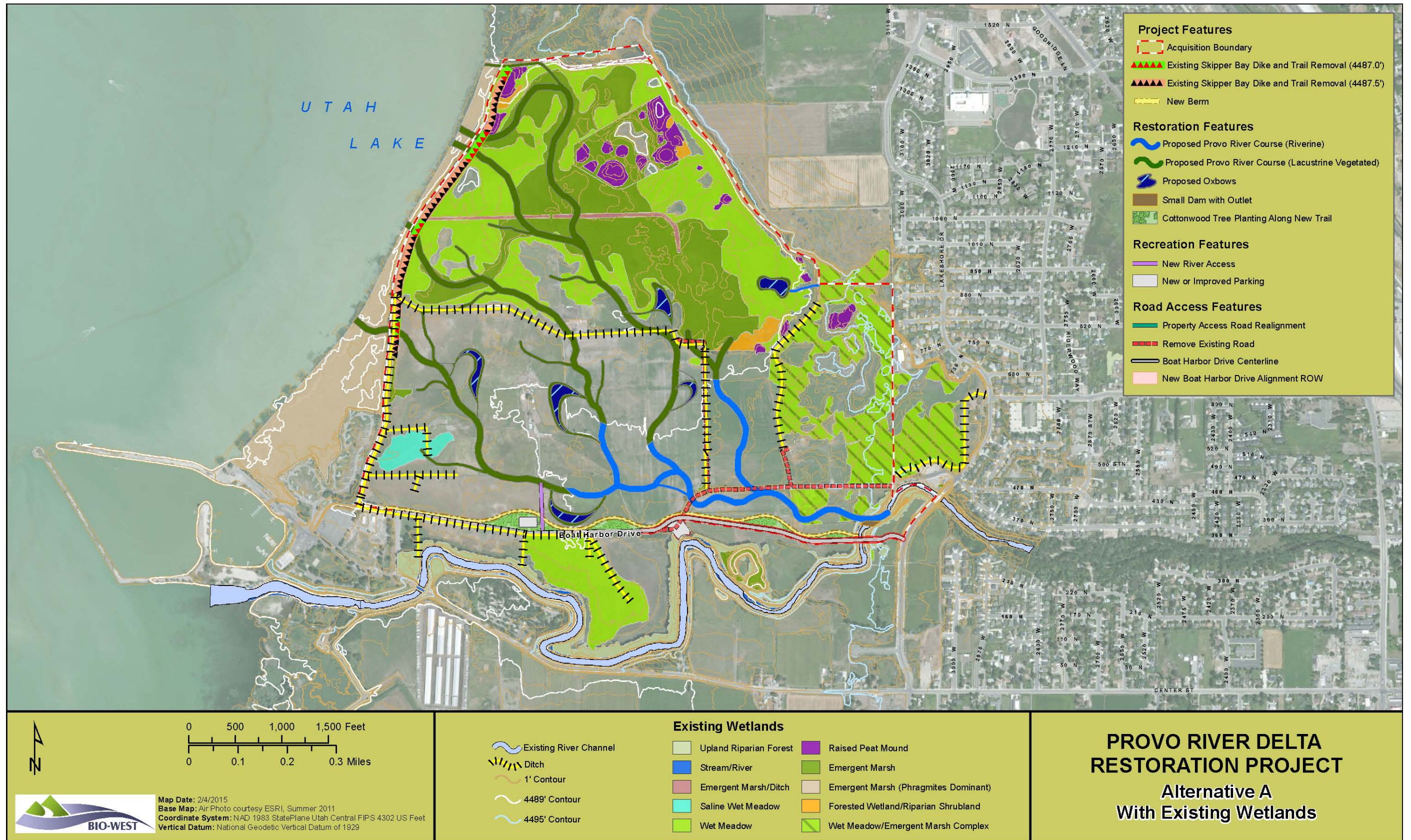


Figure A-19

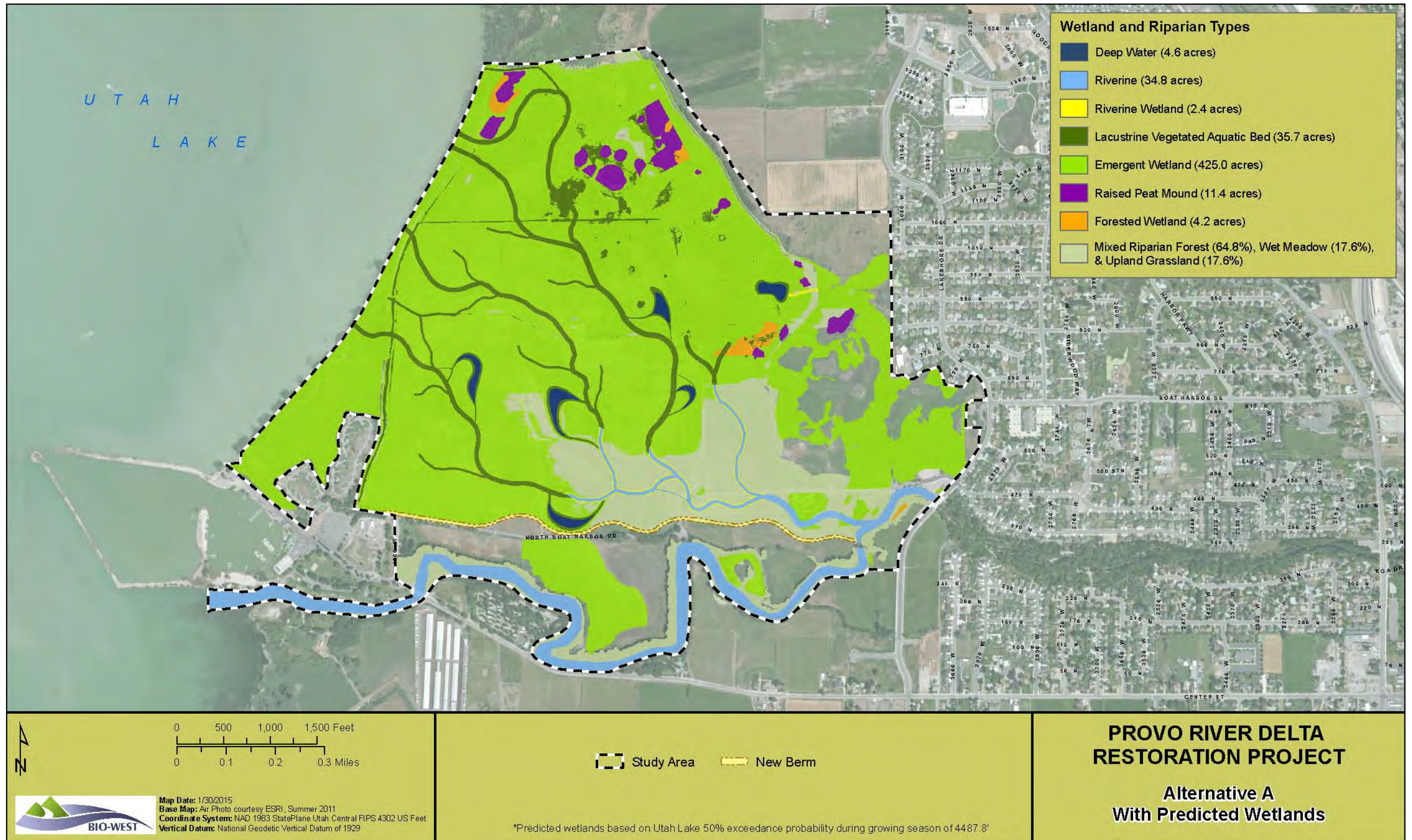


Figure A-20

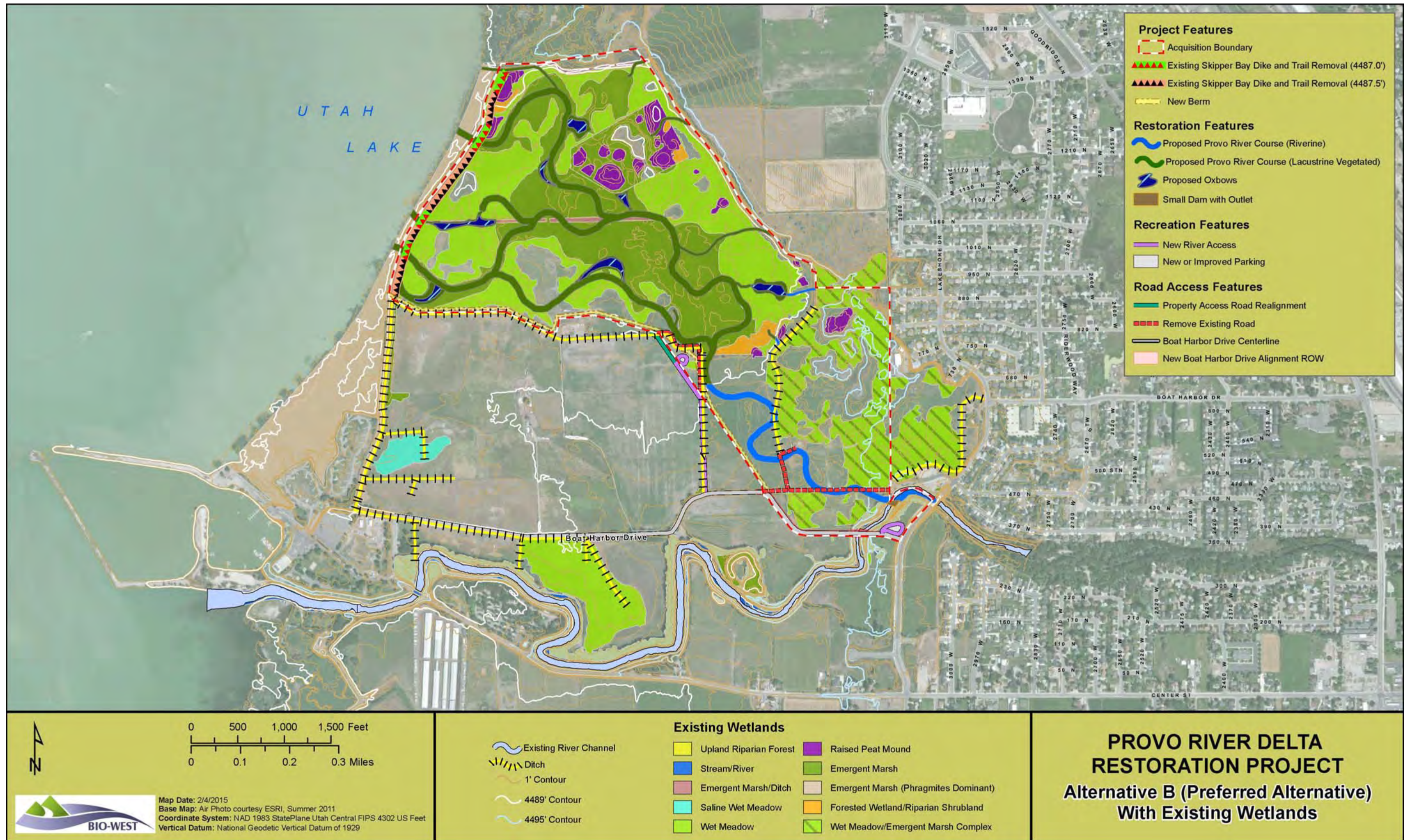


Figure A-21

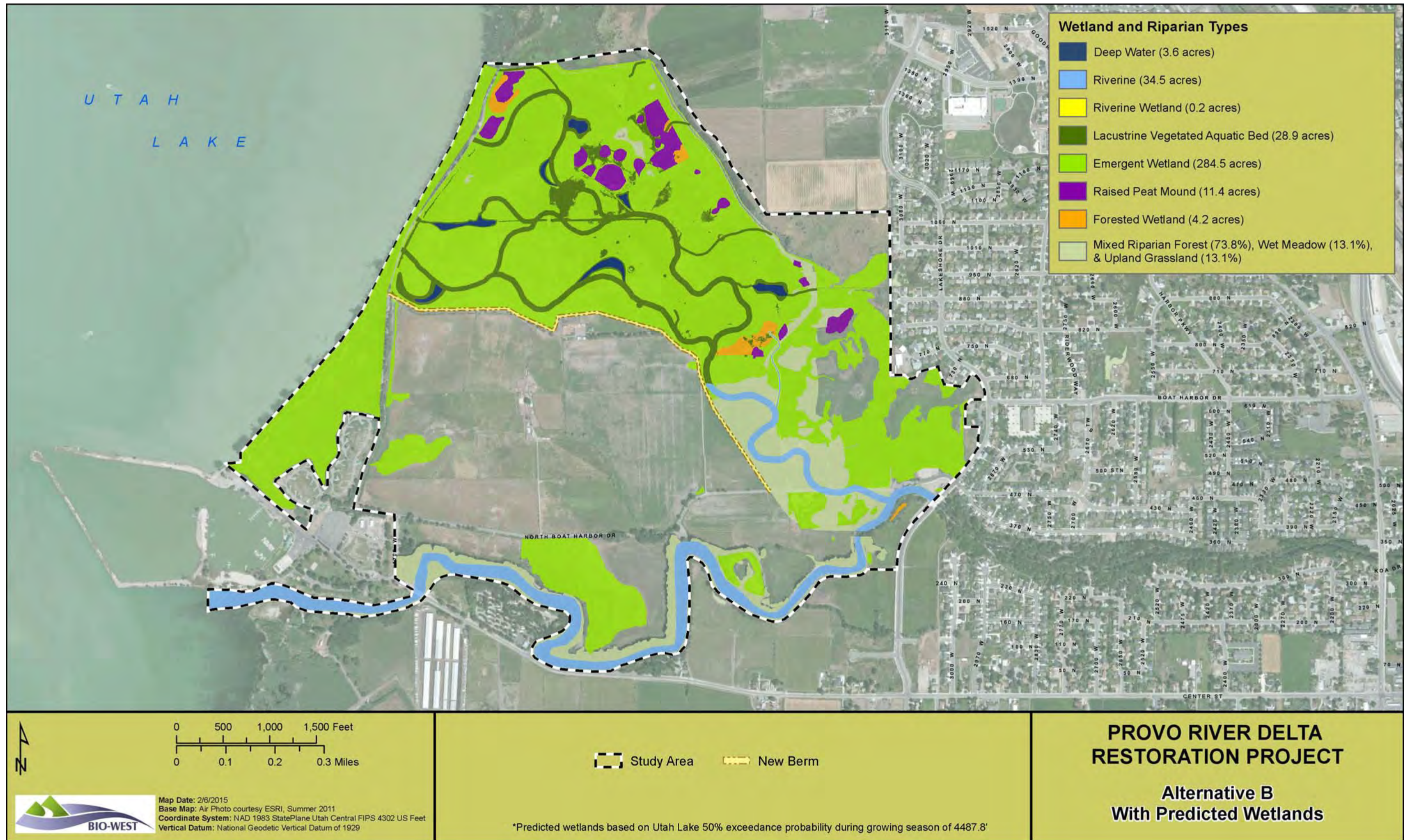


Figure A-22

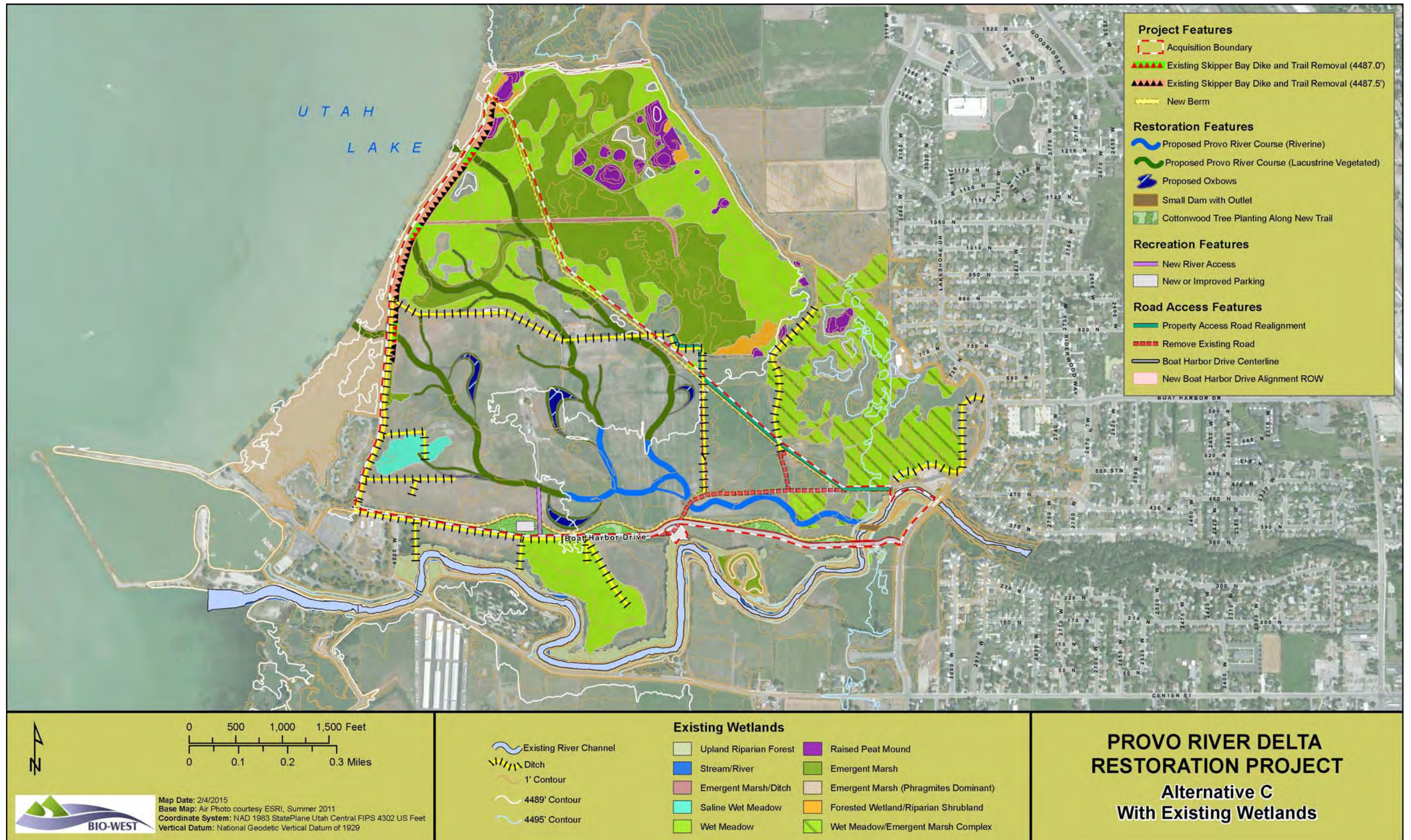


Figure A-23

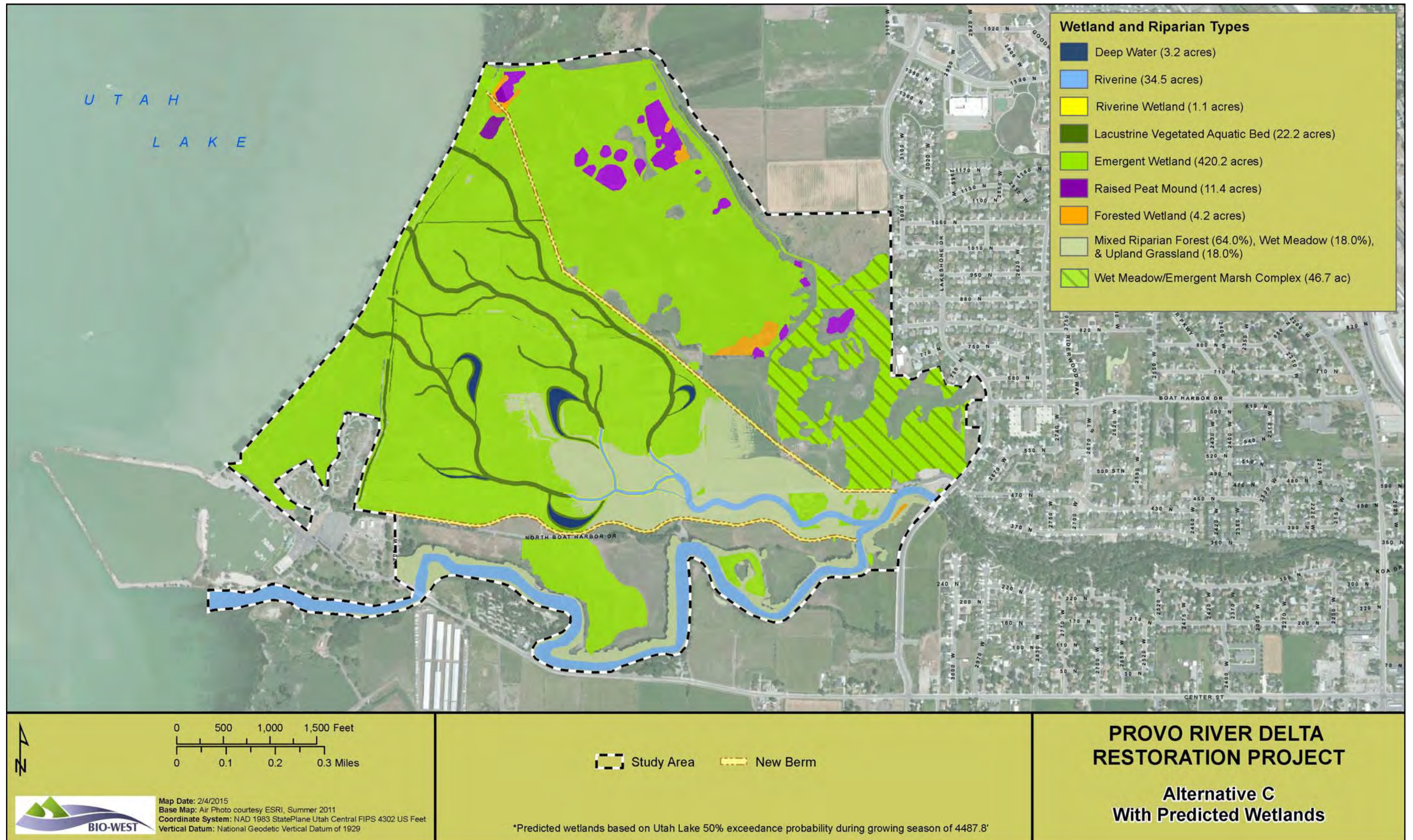


Figure A-24

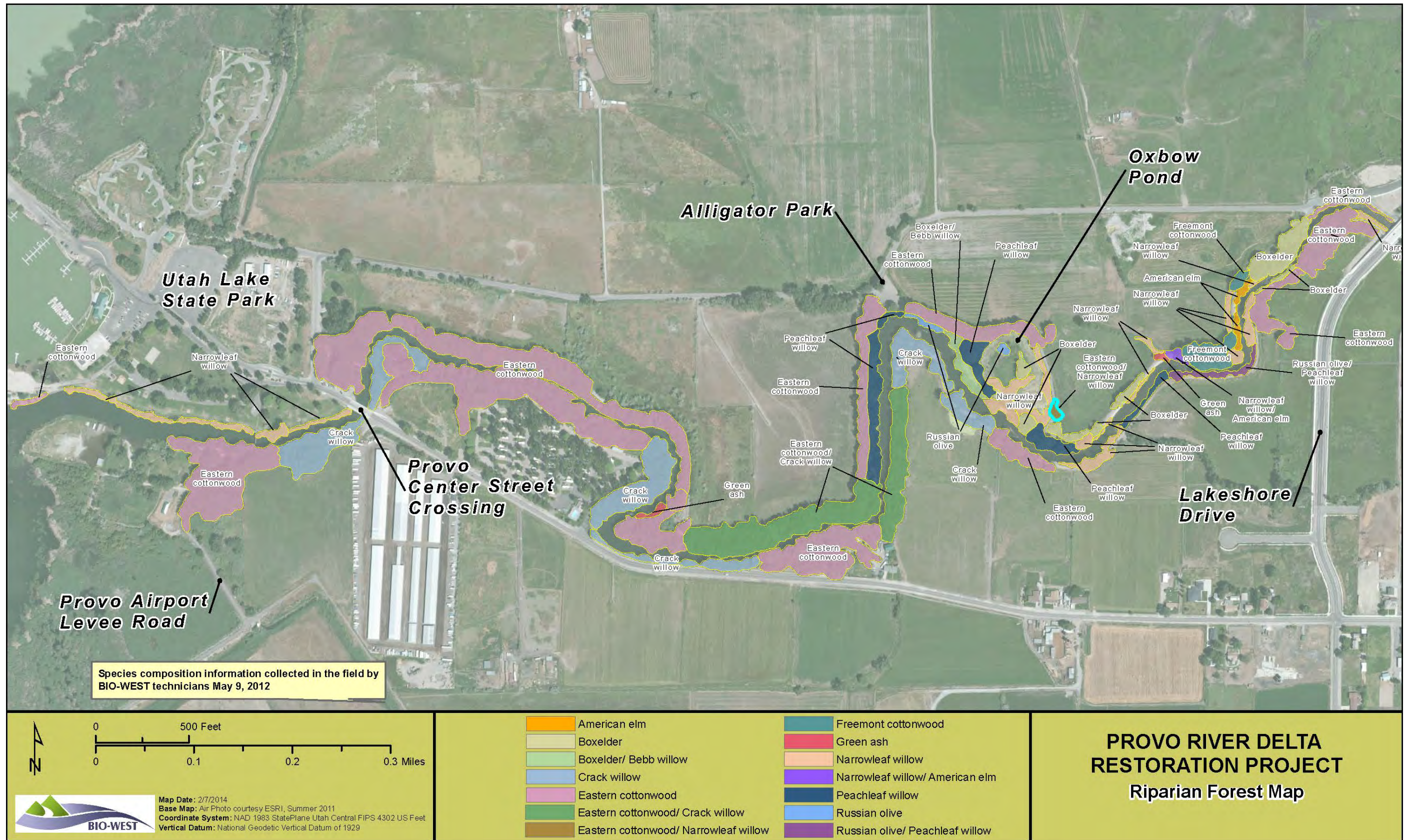


Figure A-25

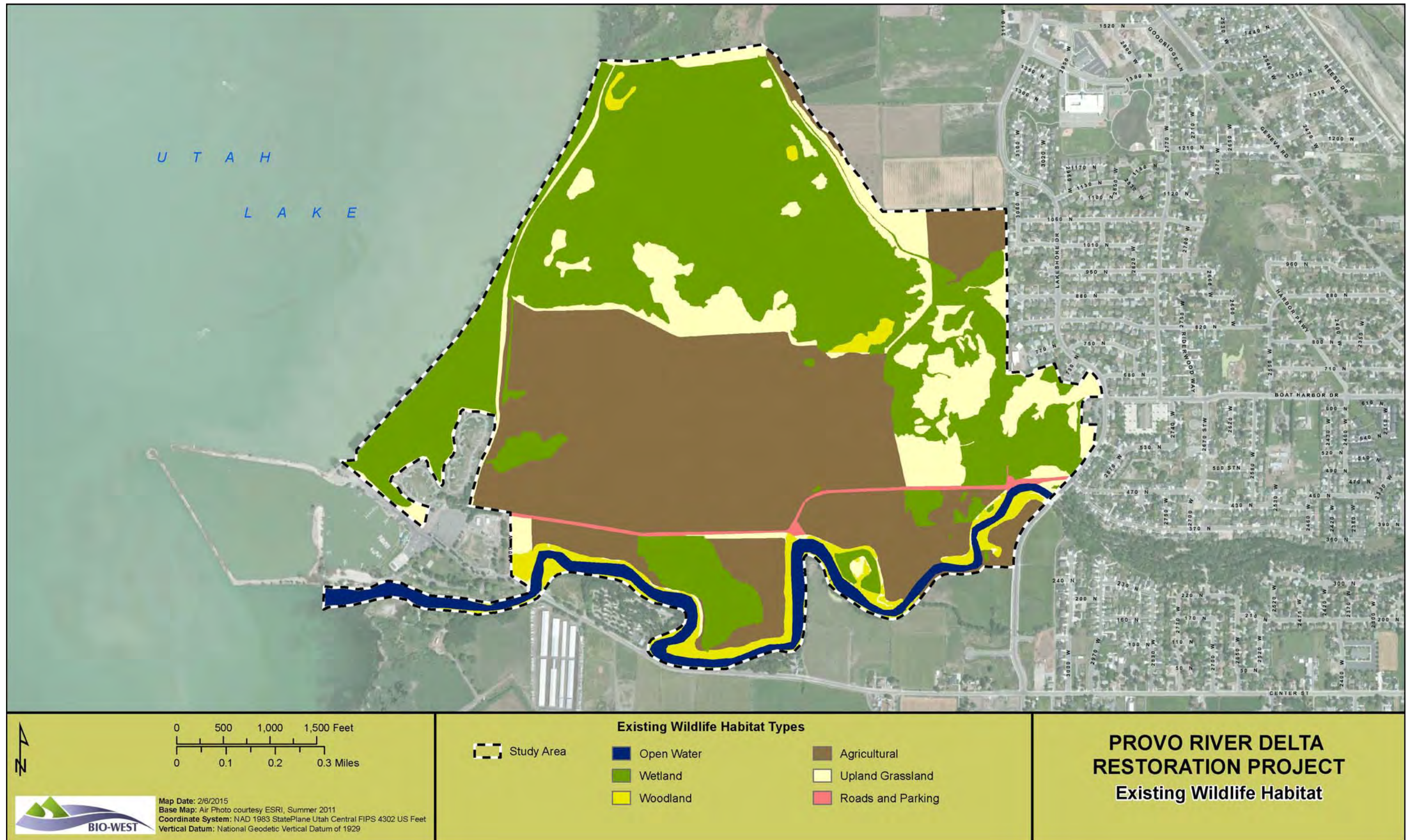
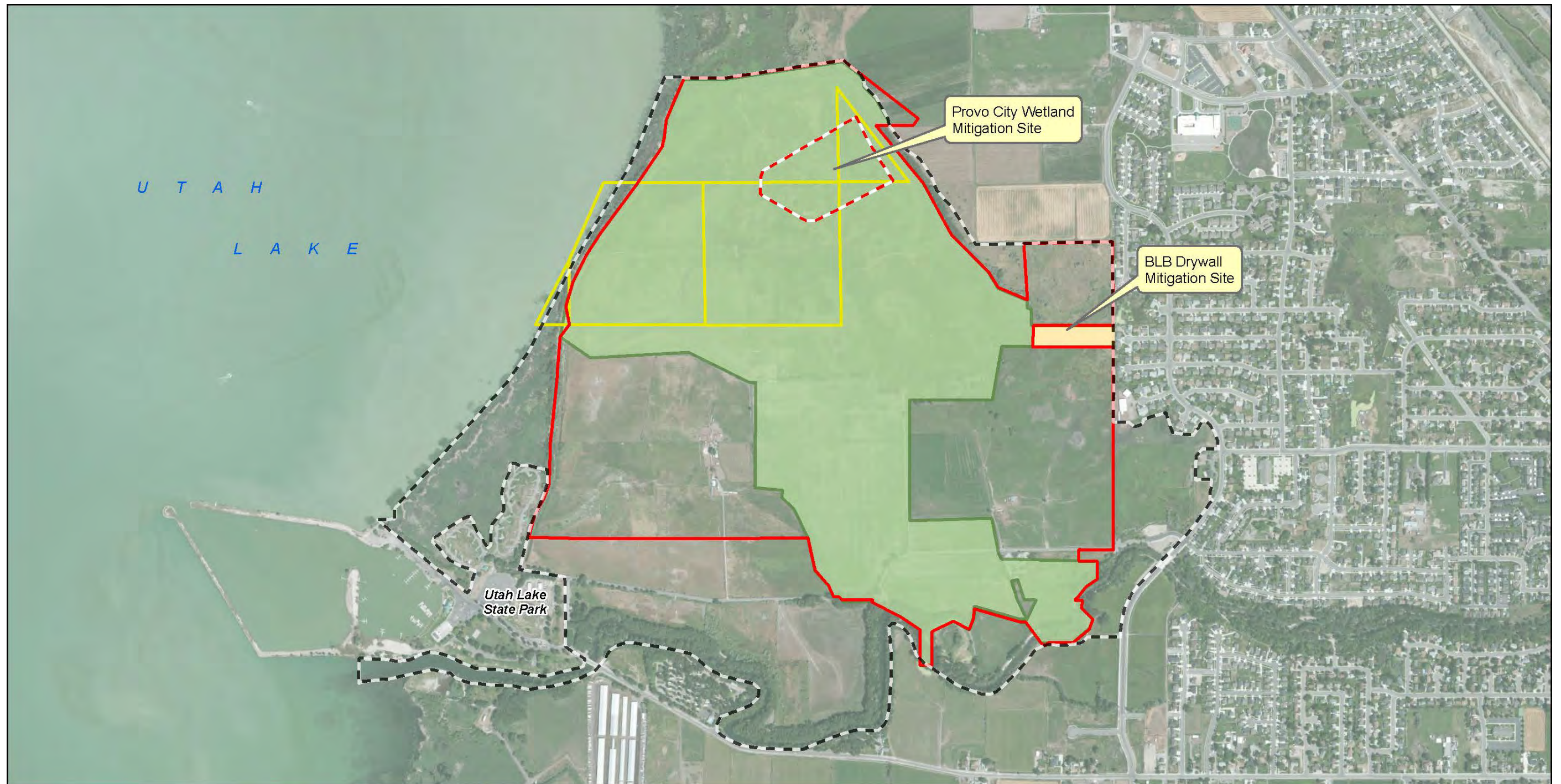




Figure A-26





0 500 1,000 1,500 Feet
 0 0.1 0.2 0.3 Miles

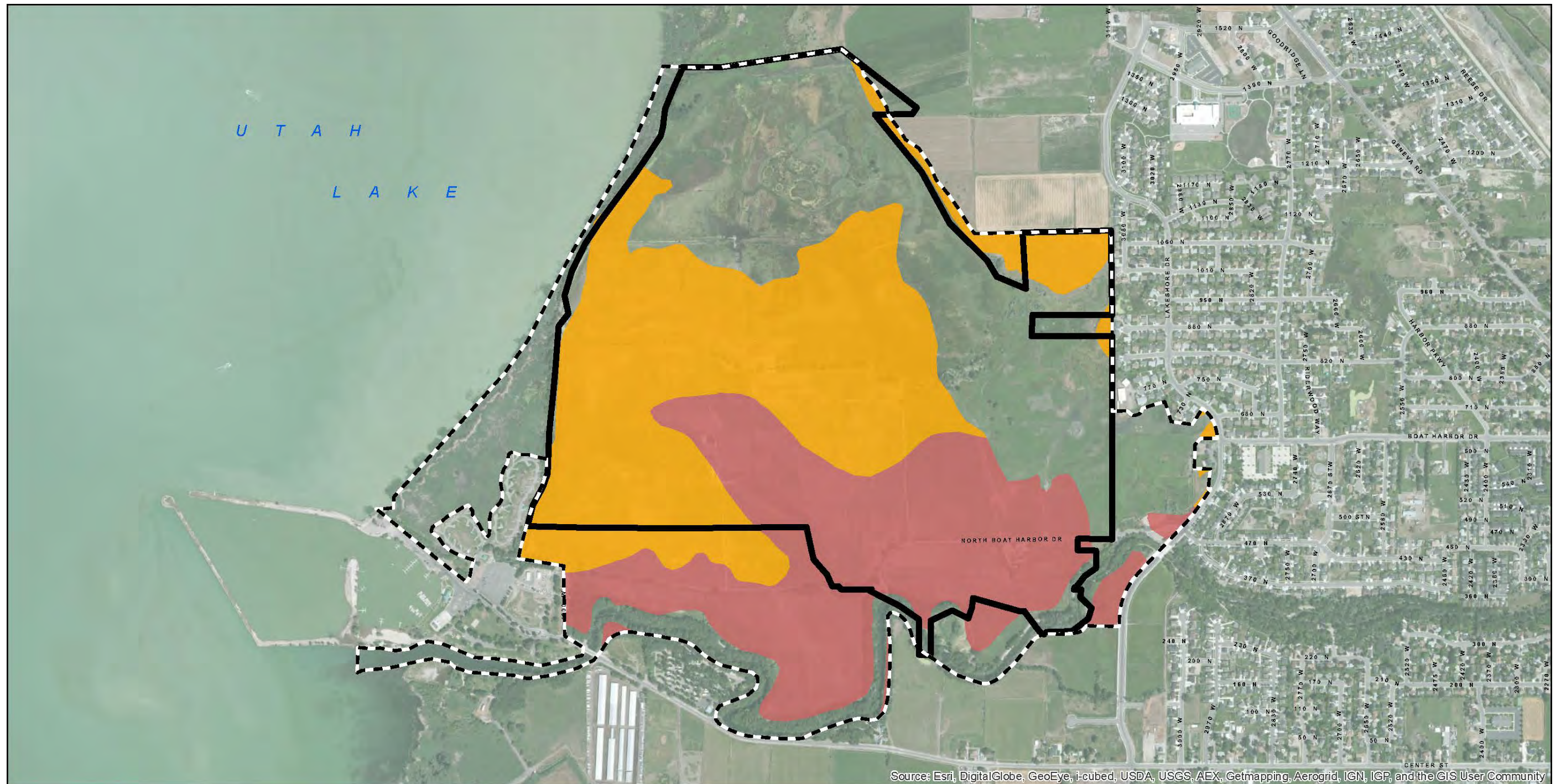



Map Date: 2/13/2014
 Base Map: Air Photo courtesy ESRI, Summer 2011
 Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 US Feet
 Vertical Datum: National Geodetic Vertical Datum of 1929

Land Encumbrances	
	Study Area
	Provo City Mitigation Site (16.7 ac)
	Agricultural Protection Area (490.0 ac)
	Federal Ownership (86.1 ac)
	Despain Conservation Easement (333.0 ac)
	BLB Drywall Mitigation Site (3.7 ac)

**PROVO RIVER DELTA
 RESTORATION PROJECT
 Land Encumbrances**


Figure A-27









0 500 1,000 1,500 Feet
 0 0.1 0.2 0.3 Miles

Map Date: 2/7/2014
Soil Data: Soil Survey Geographic (SSURGO) Database downloaded July 19, 2011 from <http://soildatamart.nrcs.usda.gov>
Base Map: Air Photo courtesy Microsoft BING, Summer 2011
Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 US Feet
Vertical Datum: National Geodetic Vertical Datum of 1929



Map Symbol

 Study Area	 Prime farmland if irrigated
 County - designated Agricultural Protection Area	 Farmland of statewide importance

**PROVO RIVER DELTA
RESTORATION PROJECT**
Agriculture and Farmlands

Figure A-28

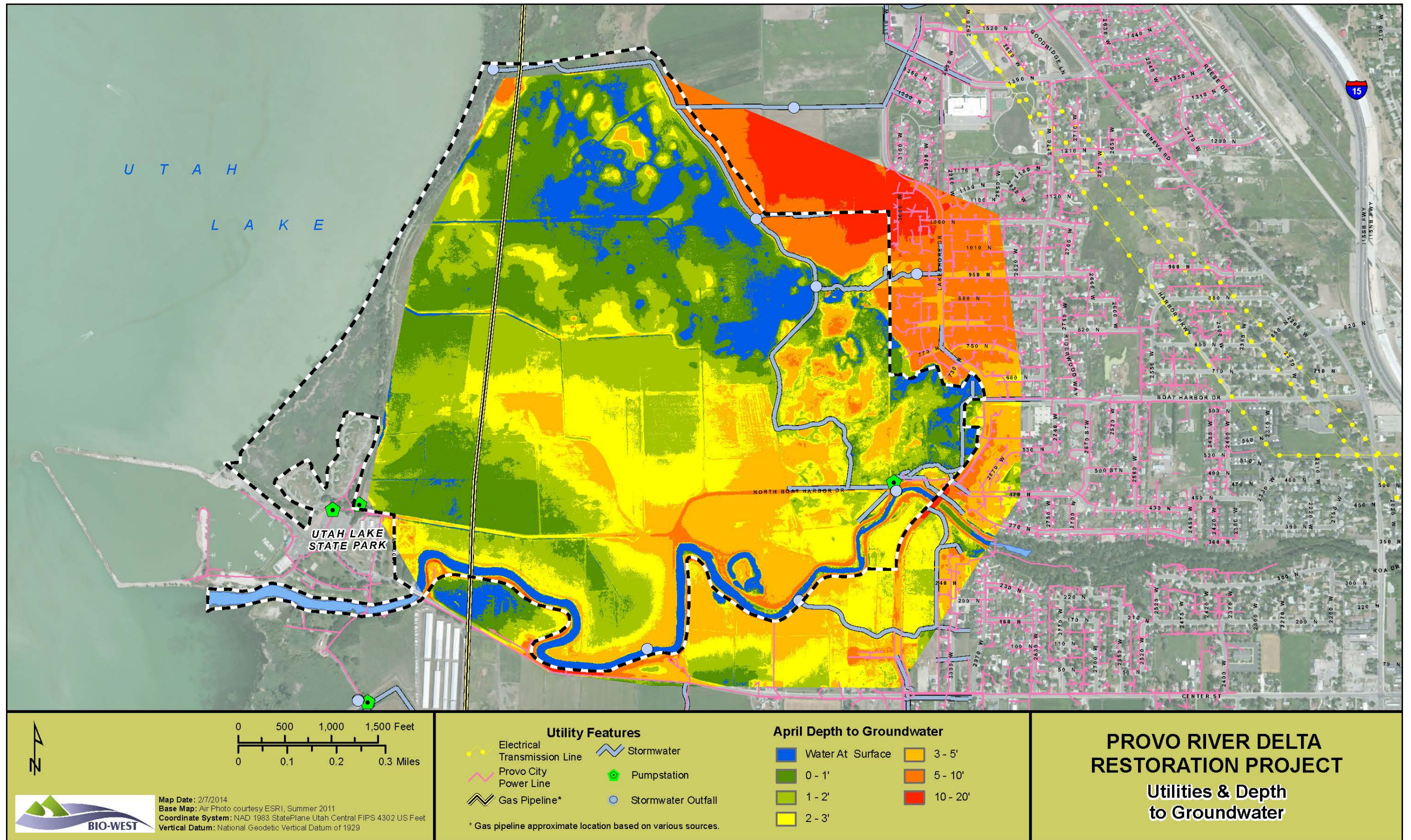

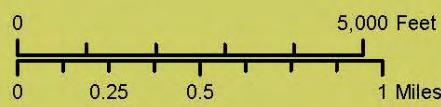






Figure A-29



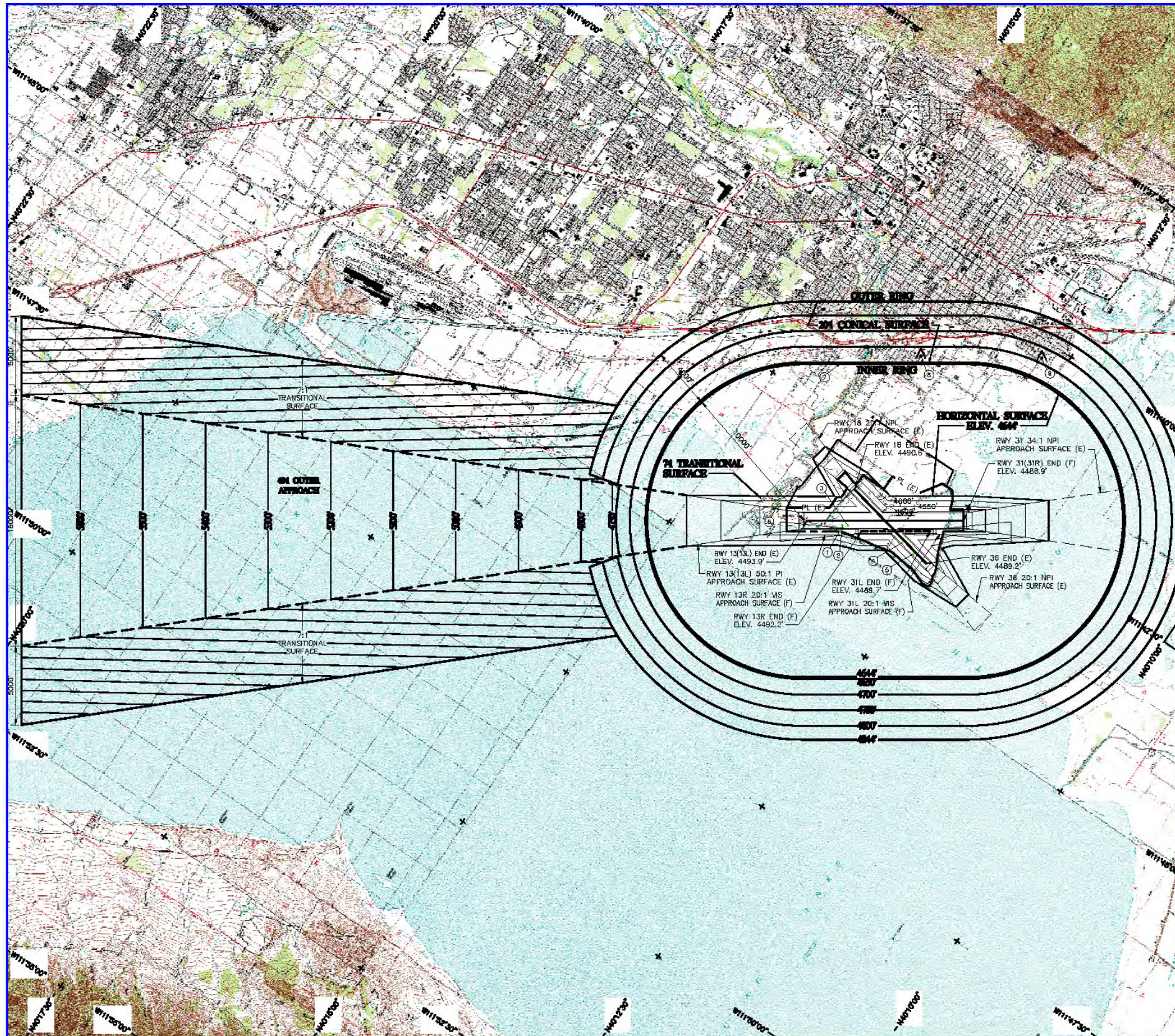
Map Date: 2/7/2014
Base Map: Air Photo courtesy ESRI, Summer 2011
Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 US Feet
Vertical Datum: National Geodetic Vertical Datum of 1929



-  Avian Survey Areas
-  Project Study Area
-  Skipper Bay Dike

**PROVO RIVER DELTA
 RESTORATION PROJECT**
 Areas Used to Evaluate
 Existing Bird Communities

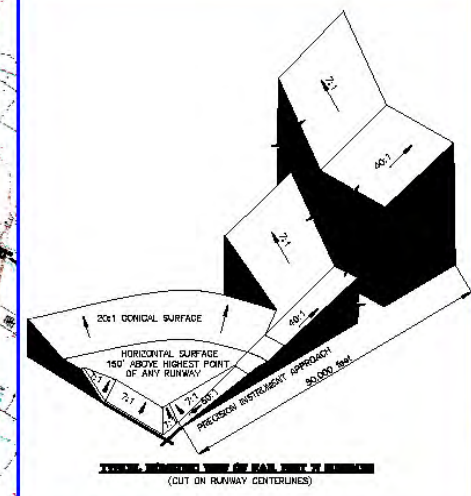
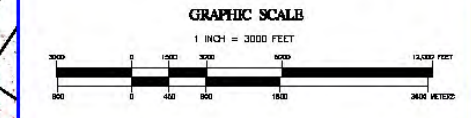
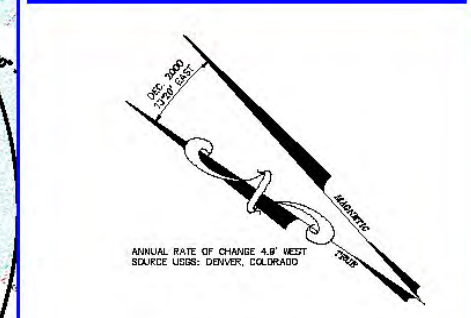
Figure A-30



- NOTES**
1. PRIMARY RUNWAY 13-31(13R/31R) IS 10,000 FEET IN LENGTH AS SHOWN. PRIMARY SURFACE FOR 13-31(13L/31L) IS 1000 FEET WIDE BY 10,400 FEET IN LENGTH. PRIMARY SURFACE FOR 18-36 IS 6,622 FEET IN LENGTH AS SHOWN. PRIMARY SURFACE FOR 18-36 IS 500 FEET WIDE BY 7,002 FEET IN LENGTH. PRIMARY RUNWAY 13R/31L IS 4,400 FEET IN LENGTH AS SHOWN. PRIMARY SURFACE FOR 13R/31L IS 250 FEET WIDE BY 4,800 FEET IN LENGTH.
 2. NO TERRAIN OBSTRUCTIONS WERE FOUND. FOR MAN MADE OBSTRUCTIONS SEE OBSTRUCTION TABLE BELOW.
 3. USGS 7.5 MINUTE TOPOGRAPHIC (QUAD) MAPS USED FOR CONTOUR BASE: BRIDAL VEIL FALLS, UTAH, DATED 1983; LEHI, UTAH, DATED 1984; LINCOLN POINT, UTAH, DATED 1983; OREM, UTAH, DATED 1984; PELICAN POINT, UTAH, DATED 1982; PISCATAWAY, UTAH, DATED 1993; SARATOGA SPRINGS, UTAH, DATED 1984; ROLLERS PASS, UTAH, DATED 1993; SPRINGVILLE, UTAH, DATED 1993; TIMPANOGOC CAVE, UTAH, DATED 1993.
 4. AIRPORT ELEVATION IS 4644' (4643.9') ABOVE MEAN SEA LEVEL (MSL).

OBSTRUCTION TABLE				
NO	OBJECT	TOP ELEVATION	PART 77 PENETRATION	DISPOSITION
1	TREE	4541'	26'-7.1' TRANS.	TO BE REMOVED
2	BUSH	4501'	11'-PRIMARY	TO BE REMOVED
3	BUSH	4499'	9'-PRIMARY	TO BE REMOVED
4	TREE	4500'	10'-PRIMARY	TO BE REMOVED
5	TREE	4500'	10'-PRIMARY	TO BE REMOVED
6	TREE	4583'	13'-7.1' TRANS.	TO BE REMOVED
7	TOWER	4647'	3'-HORIZONTAL	(OL) (F)
8	TOWER	4580'	10'-CONICAL	(OL) (E)
9	TOWER	4758'	8'-CONICAL	(OL) (E)

(OL) = OBSTRUCTION LIGHTED



NO. REVISIONS CED DATE

PROVO MUNICIPAL AIRPORT

ADG AIRPORT DEVELOPMENT GROUP, INC. AIRPORT PLANNING, DESIGN, AND CONSTRUCTION SERVICES

PROJECT NO. P200004
 DESIGNED BY: JIS
 DRAWN BY: JIS
 APPROVED BY: JIS
 DATE: DECEMBER 200

AIRPORT PLAN AIRSPACE PLAN (PART 77)

EXHIBIT III OF XX EXHIBITS

AIP PROJECT NO: 3-49-007-18

Figure A-31

PROVO RIVER DELTA RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix B: Vegetation Management Plan

Provo River Delta Restoration Project Vegetation Management Plan

Prepared by the Utah Reclamation Mitigation
and Conservation Commission

April 2015

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Management Techniques 8

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Introduction

The Provo River Delta Restoration Project is a multi-agency effort proposed to restore the Provo River delta at Utah Lake. The proposed project would restore habitat in the lower Provo River, essential for spawning, hatching, larval transport, survival, rearing and recruitment of the June sucker population on a self-sustaining basis. The proposed project includes restoring the Provo River/Utah Lake interface from its current channelized location and allowing it to connect to Utah Lake to the north in Skipper Bay, where a delta ecosystem would be restored to provide the diverse habitat required for June sucker recruitment. This action is being undertaken specifically to address the problem of lack of natural recruitment by June sucker, an endangered fish species, in Utah Lake. It responds directly to criteria of the June Sucker Recovery Plan (USFWS 1999) and the June Sucker Recovery Implementation Program (JSRIP) (USFWS 2002).

The proposed project is needed to facilitate recovery of June sucker through restoring spawning and rearing habitat conditions at the Utah Lake-Provo River interface. The proposed project is being evaluated to meet the requirements of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§4321-4370). Under NEPA guidelines a range of project alternatives are being analyzed to disclose the environmental effects of each alternative. All of the project alternatives evaluated would restore the surface water hydrologic connection between the study area and Utah Lake to some degree. A net increase in wetland acreages is expected for all of the alternatives. Wetland areas would be enhanced and some upland pasture areas would revert to their historic wetland condition. Long term management of the wetland vegetation within the delta project study area is needed to prevent further spread of common reed (*Phragmites australis*) and other weed species of concern.

Study Area Description

The study area is approximately 707 acres located adjacent to the east shore of Utah Lake and the Provo River in Utah County, UT (Figure 1). Some portion of the study area would be acquired and restored as a river delta if an action alternative is selected in a Record of Decision (ROD) following release of the Final Environmental Impact Statement (Final EIS).

The study area is primarily agricultural land used for grazing and hay production and is composed of uplands and wetland areas including emergent marsh, wet meadow, forested wetlands, and raised fens. The majority of the study area is located behind a flood-control dike (Skipper Bay dike) that prevents Utah Lake from inundating the area. West of Skipper bay dike, the study area contains 38.2 acres of emergent marsh dominated by common reed, an invasive emergent weed (URMCC et al 2012). In addition to flood-control, the area contains numerous other hydrologic alterations including drainage ditches, irrigation canals, and surface pumping systems designed to keep the study area from flooding.



Figure 1. Proposed Provo Delta River Restoration Study Area

Typical species associated with wetlands in the study area include hard stem bulrush (*Schoenoplectus acutus*), Olney's bulrush (*Schoenoplectus americanus*), creeping bentgrass (*Agrostis stolonifera*), arctic rush (*Juncus arcticus*), Nebraska sedge (*Carex nebrascensis*), common spikerush (*Eleocharis palustris*), reed canary grass (*Phalaris arundinacea*), Nuttall's sunflower (*Helianthus nuttallii*), saltgrass (*Distichlis spicata*), cattail (*Typha latifolia*), coyote willow (*Salix exigua*), eastern cottonwood (*Populus deltoids*), Fremont cottonwood (*Populus Fremontii*), and common reed.

Threatened and Endangered Species in the Study Area

Federally threatened and endangered species known to occur or potentially occur within the study area include Ute ladies'-tresses (*Spiranthes diluvialis* – threatened), June sucker (*Chasmistes liorus* - endangered), and Yellow-billed cuckoo (*Coccyzus americanus* – threatened). Mitigation measures to reduce and avoid potential adverse effects to June sucker and Yellow-billed cuckoo are specified in the Final Environmental Impact Statement, as are requirements before and during construction to protect Ute ladies'-tresses. Specific weed management requirements for areas of Ute ladies'-tresses

occurrences have been determined through formal consultation with the U.S. Fish and Wildlife Service and are incorporated in this Vegetation Management Plan.

Vegetation Management Goals

The purpose of this Vegetation Management Plan is to direct the project area vegetation management, once an alternative is selected and implemented, to provide habitat to aid in June sucker recovery and restore, preserve, and improve native riparian and wetland habitats. This vegetation management includes the control of noxious weeds or other undesirable vegetation in the project area.

Weed Species of Concern

The Utah State Department of Agriculture classifies noxious weeds within the state into three classes under Section 4-17-3, Utah Noxious Weed Act: Class A (Early Detection Rapid Response), Class B (Control) and Class C (Containment). Please refer to

<http://www.ag.utah.gov/divisions/plant/noxious/documents/noxUtah.pdf> for additional information.

The state listed noxious weeds in Table 1 are all species of concern within the project study area. In addition to the state listed noxious weeds, Table 2 describes other non-listed weedy species that are of concern within the project study area. Of the species listed in Tables 1 and 2, the weed species of highest concern are knapweeds, thistles, Tamarisk, and Russian olive (*Elaeagnus angustifolia*). Common reed (*Phragmites australis*) which Utah County declared a noxious weed in 2009 is the species of overall highest concern.

Table 1. Statewide Noxious Weeds, Listed by Class.

Common Name	Scientific Name	Annual or Perennial
Class A: Early Detection Rapid Response (EDRR) Declared noxious weeds not native to the state of Utah that pose a serious threat to the state and should be considered as a very high priority.		
Blackhenbane	Hyoseyamus niger (L.)	Annual or biennial
Diffuse Knapweed	Centaurea diffusa (Lam.)	Biennial or perennial
Johnson Grass	Sorghum halepense (L.) Pers.	Perennial
Leafy Spurge	Euphorbia esula L.	Perennial
Medusahead	Taeniatherum caput-medusae	Annual
Oxeye daisy	Chrysanthemum leucanthemum L.	Perennial
Purple Loosestrife	Lythrum salicaria L.	Perennial
St. Johnswort	Hypericum perforatum L	Perennial
Spotted Knapweed	Centaurea maculosa Lam.	Biennial or Perennial
Sulfur cinquefoil	Potentilla recta L.	Perennial
Yellow Starthistle	Centaurea solstitialis L	Annual
Yellow Toadflax	Linaria vulgaris Mill.	Perennial
Class B: (Control) Declared noxious weeds not native to the state of Utah, that pose a threat to the state and should be considered a high priority for control		
Bermudagrass	Cynodon dactylon (L.) Pers	Perennial
Dalmation Toadflax	Linaria dalmatica (L.) Mill	Perennial
Dyer's Woad	Isatis tinctoria L.	Annual, Biennial or Perennial
Hoary cress	Cardaria spp.	Perennial

Musk Thistle	<i>Carduus nutans</i> L.	Biennial
Perennial Pepperweed	<i>Lepidium latifolium</i> L.(Tall Whitetop)	Perennial
Poison Hemlock	<i>Conium maculatum</i> L.	Biennial
Russian Knapweed	<i>Centaurea repens</i> L.	Perennial
Squarrose Knapweed	<i>Centaurea virgata</i> Lam. Ssp	Perennial
Scotch Thistle	<i>Onopordium acanthium</i> L.(Cotton Thistle)	Biennial
Class C: (Containment) Declared noxious weeds not native to the state of Utah that are widely spread but pose a threat to the agricultural industry and agricultural products with a focus on stopping expansion.		
Canada Thistle	<i>Cirsium arvense</i> (L.) Scop.	Perennial
Field Bindweed	<i>Convolvulus</i> spp. (Wild Morning-glory)	Perennial
Houndstounge	<i>Cynoglossum officinale</i> L.	Biennial
Quackgrass	<i>Agropyron repens</i> (L.) Beauv.	Perennial
Saltcedar (Tamarisk)	<i>Tamarix ramosissima</i> Ledeb.	Perennial

Table 2. Other Plants of Concern not Included on the Statewide Noxious Weed List.

Common Name	Scientific name	Annual/Perennial
Lambsquarter	<i>Chemopodium berlandieri</i>	Annual
Annual ragweed	<i>Ambrosia artemisiifolia</i>	Annual
Curly dock	<i>Rumex crispus</i>	Perennial
Spiny cocklebur	<i>Xanthium spinosum</i>	Annual
Stinging nettle	<i>Urtica dioica</i>	Perennial
Siberian elm	<i>Ulmus pumila</i>	Perennial
Russian olive	<i>Elaeagnus angustifolia</i>	Perennial
Fivehorn smotherweed	<i>Bassia hyssopifolia</i>	Annual
Reed canarygrass	<i>Phalaris arundinacea</i>	Perennial
Common reed ¹	<i>Phragmites australis</i>	Perennial

¹Declared a noxious weed by Utah County in 2009.

Areas with recent disturbance are more likely to provide habitat for noxious species establishment. Along the Provo River and canals in the study area, annual high water deposits seeds of Russian olive, Siberian Elm, Tamarisk, and common reed. Riparian areas and canals are especially vulnerable to nonnative species invasion and control of these areas is a high priority.

Common reed, which is conventionally referred to as “phragmites,” is of particular concern within the study area as it is a nonnative grass that has rapidly spread around Utah Lake, crowding out diverse native wetland vegetation, and reducing the availability and quality of wetland habitats. Large monocultures of common reed exist immediately adjacent to the project study area to the north and west. The majority of Utah Lake shoreline is dominated by common reed (Utah Lake Commission 2009).

Other Utah Lake Area Vegetation Management Programs

There are currently several other agencies actively managing weeds around Utah Lake. These agencies and a brief description of their management duties are described below. As part of the proposed restoration project, the Utah Reclamation Mitigation and Conservation Commission is working closely with these agencies to ensure that overall weed management strategies are effectively coordinated. Coordination with these agencies will continue through project construction and into the long term management of weeds on the project area once an alternative is selected and implemented.

Utah County Public Works. Utah County's weed control division is responsible for enforcing the Utah state weed laws. They work with the Utah County Weed Control Board, a 5 member board appointed by the Utah County Legislative body to educate and find new ways to control noxious weed and enforce the state weed laws. The members are assigned to different areas of the county and work with the people in their areas to address their concerns. They are cooperating with the Utah Lake Commission and the Utah Division of Forestry Fire and State Lands on weed control on the Utah Lake Shoreline.

Utah Lake Commission. The Utah Lake Commission is made up of Utah County municipalities, state agencies and water users. It is the Utah Lake Commission's goal to promote multiple public uses of the lake, facilitate orderly planning and development in and around the lake, and enable individual Commission members to govern their own areas.

The Utah Lake Master Plan (Utah Lake Commission 2009) is the guiding document for the Utah Lake Commission and functions as a management plan for the Utah Division of Forestry Fire and State Lands(State Lands). The Document provides policy framework for decisions on actions taken to improve and protect Utah Lake. The Master Plan's Natural Resource policies include encouragement of control of invasive or undesirable plant species. Natural Resources Goal 4 describes a desired future condition of existing invasive species being controlled and effectively managed to minimize their negative effects on Utah Lake Natural resources. The Master Plan further states in the Invasive species objective for phragmites control: "The [Utah Lake] Commission will actively promote efforts to control phragmites and [be] a resource for information on effective phragmites control measures. Phragmites is an invasive, non-native species that result in a monoculture that reduces habitat for numerous beneficial species."

Utah Division of Forestry, Fire, and State Lands. The Utah Division of Forestry, Fire, and State Lands prescribes general land management objectives for sovereign lands, which includes the bed of Utah Lake. The Utah Lake Master Plan referenced above also serves as the State Lands Comprehensive Management Plan for Utah Lake. Since 2008, State Lands, Utah County Weed Control Division and the Utah Lake Commission have been treating sections of the Utah Lake shoreline to remove phragmites, tamarisk and Russian olive. By 2012, 25 miles of shoreline have been treated, with the goal of clearing the whole shoreline (approximately 75 miles) in 10 years (Utah Lake Commission 2013).

Select Pertinent Laws and Regulations

The Clean Water Act and the Utah Division of Water Quality Utah Pollutant Discharge Elimination System(UPDES)- The Pesticide General Permit (UPDES Number UTG170000) is a State of Utah general permit regulating point source discharges to waters of the State from the application of pesticides. This permit regulates the use of pesticides on or near waters of the state in Utah for purposes of control of mosquitos and other insect pests, weed and algae control, nuisance animal control and forestry canopy pest control. The permit holder is required to file a notice of intent to apply pesticides, describing the waters that will receive the pesticides. The permit also requires that pesticide use effectiveness is monitored and that an annual report of the acreage treated is developed.

Federal Insecticide, Fungicide and Rodenticide Act, June 25, 1947, as amended (FIFRA). 7 USC 136 et seq. This is the basic law that regulates pesticide use in the United States. This act covers pesticide registration, labeling, use, applicator certification, disposal, transportation and research as well as administrative and regulatory activities.

Executive Order 13112- Invasive Species This executive order requires that Federal Agencies and federally funded projects monitor and control invasive and noxious species. This order defines invasive species, requires federal agencies to address invasive species concerns and to not authorize or carry out new actions that would cause or promote the introduction of invasive species. It also established the National Invasive Species Council which is tasked with ensuring that Federal programs and activities to prevent and control invasive species are coordinated, effective and efficient.

Utah Noxious Weed Act-Utah Administrative Code, R68-9, directs state and county agencies and private citizens to control and manage undesirable plants on the lands they manage or own. State weed laws have made exotic plant management part of a state and local community effort.

Management Techniques

Vegetation management will take place during all project phases: design, implementation or construction, and operation and maintenance. It will consist of vegetation inventory, including mapping, noxious weed control, revegetation with desirable species, monitoring and maintenance activities.

During the design phase, all habitats would be mapped, including those dominated by weed species. This mapping would be used to refine the specific areas in which weed treatment would be required before, during and after construction. It is recommended that phragmites in particular, be mapped and controlled before ground disturbing activities occur, as this species thrives in disturbed habitats and may be one of the first to colonize a newly disturbed site (OMNR 2011). Recommended seed mixes and plant lists for revegetation would be developed during the final design phase. Emphasis will be on native species not attractive to wildlife species hazardous to aircraft at the nearby Provo City Airport.

All proposed project alternatives contain some construction activities including the excavation of a new channel for the Provo River as well as removal of some existing berms/dikes and construction of new ones. Any ground disturbing activities provide an opportunity for weed introduction or spreading into an area.

Construction guidelines recommended to prevent noxious weed introduction are as follows:

Soil Removal and Stockpiling - Top-soil should be stripped from all wetland areas to a depth of 18 inches or a depth where significant (greater than 50%) rock, stone or cobble, are encountered, whichever comes first. Due to on site conditions it is likely that all top soil in the study area contains a robust seed bank of phragmites. Top-soil should be stockpiled separately from all other soil and should not be reused during construction. Sub-soil from wetland areas with less than 40% rock, stone, cobble, etc. should be stockpiled separately. Sub-soil with more than 40% rock, stone, or cobble, should be stockpiled separately, used to construct features or spoiled.

The top 12 inches of soil from areas covered with non-native plant species (or where weeds are common) should be stripped and spoiled (buried deep). Sub-soil in these areas should be treated as above.

Soil Placement - Suitable wetland sub-soil should be used, to the maximum extent possible, to topsoil (no less than 1 foot deep, with top-soil over sub-soil) wetland and riparian areas. With the exception of constructed berms, it is not likely that construction activities will require placement of top soil for this project. Side slopes of constructed berms and other upland areas should be topped with the best sub-soil (least amount of rock, stone or cobble) on top.

Since working the soil will bring larger materials to the top, soil should be placed following all construction and final grading, and just before planting, to avoid any activity that would result in compaction which would require re-working the soil. Soil should be transported or dumped in suitable locations/piles so that it can be spread with a backhoe bucket and not driven on (even by the backhoe) or compacted in any way.

Haul Routes - Haul routes should be minimized, and, to the maximum extent practicable, should not cross wetlands, wet areas, or constructed features that will be planted. Constructing a wet crossing is far better than having crossings in multiple locations. If crossing a constructed feature that will be planted becomes necessary, it should be "ripped" prior to placement of top soil. No crossing should occur on areas that have been recently covered with top soil.

Compaction severely inhibits root growth and water percolation. For this reason, it is a significant obstacle to revegetation. To the maximum extent possible, activities that would result in compaction should be avoided. It should be noted that working soils when they are at or near field capacity (wet) results in significant compaction.

Revegetation of disturbed sites-It is recommended that all disturbed land be planted with the recommended native species seed mix or plants the same year it is disturbed unless disturbances

continue over more than one year. Site specific seed mixes and plant lists will be developed during the final design phase of the project with input from U.S. Department of Agriculture's Wildlife Services.

Area maintenance will take place once construction is complete. Weed control will be included in these activities.

In terms of listed or sensitive species and/or areas, vegetation management will be conducted consistent with the Commission's Integrated Pest Management Plan (Commission 2012). Sensitive areas include wetlands, in particular, those habitats occupied by Ute ladies' tresses (Federally listed as threatened species), and other state sensitive or conservation species. Noxious weed treatment will be conducted under the supervision of Mitigation Commission personnel. Herbicides will be spot-sprayed on infested areas to avoid contact with the sensitive species, to avoid contact with desirable species and to target only noxious weeds. Spot-spraying will be accomplished in most instances with application by backpack sprayer or four-wheeler sprayer.

Weed Control Methods

Prevention, early detection through monitoring, and control of weed species are practical means of vegetation management to achieve the habitat goals of the delta project area. Initial control of noxious weeds is integral to the success of the delta project and will likely require a combination of control techniques. This section provides a general review of the available weed control methods. This plan will be updated to incorporate new techniques as they are developed. Control methods consist of physical, cultural, biological and chemical control and a combination of these methods.

Noxious Weed Control for Target Species

Tamarisk

Cut Stump. Cut stump methods require individual trees to be removed near the base with a chain saw leaving a cut stump to be treated with herbicide application. This method leaves the root crown, which will likely resprout even following treatment. The treatment creates less soil disturbance than mechanical removal, but requires intense follow-up maintenance. The cut stump method should be used in areas where tamarisk trees are growing among native tree stands as a method to ensure that native plant material is preserved.

Mechanical Removal. Mechanical removal requires heavy equipment to remove the entire tree biomass, including the root crown. This is the most desirable removal method for large monocultures of tamarisk. All removed material/slash must be mulched at a minimum and preferably burned. The area must be raked to remove any scattered root material, which will easily root and resprout. This method often creates extensive soil disturbance and is not recommended for use in areas where tamarisk is not dominant or sensitive native vegetation is present. All mechanical removal areas will be seeded with the appropriate mix according to site conditions, and follow-up herbicide applications will be necessary.

Russian Olive

Measures to protect Ute Ladies'-tresses. To protect Ute Ladies-tresses occurrences in the project area, the following commitments are made for treating Russian olive:

1. Russian olive tree removal activities will take place between October 15 and April 1. Removal would be followed by herbicide treatment to freshly cut stumps (item 4 below). Treatment during this period of time helps to ensure that the stumps are actively drawing nutrients to the roots.
2. No wood chips will be piled within or adjacent to Ute Ladies'-tress occurrence areas; maintain a 50 foot buffer between wood chip application areas and occurrence areas.
3. If Russian olive seedlings within Ute Ladies'-tresses occurrence areas are treated, they will be hand-pulled.
4. In Ute Ladies'-tress occurrence areas, herbicide will be applied only to freshly cut stumps; a bucket (with the bottom removed) or cone will be placed around stumps to ensure herbicide drift is negligible.
5. Trees will either be removed from the site or be chipped with the appropriate buffer.

Frill Cuts and Cut Stump. Frill cutting is a control method for Russian olive requiring multiple layered cuts into the bark of the tree where herbicide is applied. This ensures delivery of the herbicide into the root system and should result in tree mortality. Frill cuts leave the upper biomass behind, which may contain seed material that will need to be removed the following growing season. Frill cutting and cut stump may be appropriate for isolated trees within native vegetation stands and small Russian olive stands. This method will require follow-up treatment of stumps as Russian olive will continue to sprout from treated material.

Mowing. Mowing is an effective control method for new infestations of seedlings and saplings less than 1 inch in diameter. Seedlings and saplings should be cut with a mower, followed with application of herbicide to the stumps. This control method should be repeated on an annual basis to address any new growth from seed stock in the area.

Mechanical Removal See tamarisk removal strategies.

Russian Knapweed

Russian knapweed control requires a multiphased approach of herbicide treatment, mowing, and disking. New infestations and vegetative regrowth of old infestations should be treated with foliar herbicide in the late spring/early summer as knapweed emerges. Following complete desiccation of the vegetative plant material, infested areas should be mowed and all plant material removed from the site. Disking must take place in the early fall to break up knapweed root material and prepare the site for revegetation. Revegetation of knapweed-infested areas

will occur in the fall with seeding of native sod-forming grass, such as western wheatgrass. This is imperative to establishing a dominant ground cover prior to the spring to out compete any knapweed seed stock remaining in the soil.

Phragmites

As previously mentioned phragmites is currently being treated on a large scale within and adjacent to the study area. Efforts will be made to continue treatment consistent with the current methods being used.

Current research on phragmites control at Utah State University is evaluating 5 different treatment regimes that are reasonable for small (quarter acre) patches. Many of these could be used to treat larger areas. One year after initial treatments, the best results have been observed from a summer mow, and a fall glyphosate treatment. This treatment regime seems to be most effective at reducing the regrowth of phragmites the next year, and allowing for native species return. The challenge with this treatment is that mowers may get stuck during the summer mow period, when the water levels are still quite high, so equipment can make a difference. (Christine Rohal, pers. comm. USU, email July 6, 2013).

Three other spray treatments included in this research are: summer glyphosate spray with a winter mow, summer imazapyr spray with a winter mow, and fall glyphosate spray with a winter mow. All three of these treatments were fairly effective at removing phragmites after the first year, with the imazapyr treatment looking slightly better. All three winter mows after these spray treatments left substantial amounts of litter, which is a big impediment to regrowth of native plants. The summer mow treatment seemed to have less litter, with a better chance for native species establishment (C. Rohal, USU, pers. comm.).

Soil Solarization This method is accomplished by placing a cover of plastic over the soil surface to increase the soil temperatures to kill plants, seeds, pathogens and insects. If the cover is opaque, it will block sunlight, stopping photosynthesis and kill the covered plants (TNC 2001). The technique is currently being tested against phragmites (Kettenring et al 2012) and may be effective on a small scale for new infestations post construction.

Flooding Where water control levels can be manipulated, flooding may be used to control some noxious weeds. This control method may not be feasible on the delta project area, as the water depths required to effectively treat weeds, e.g., ~ 5 feet taller than an entire stand of phragmites (OMNR 2011), would be difficult to achieve under the expected delta water regime and the Utah Lake levels. It may be possible to apply to newly emerging plants in the spring with shallower water depths (OMNR).

Quackgrass, Canada Thistle, Musk Thistle, Field Bindweed, and Houndstongue

Infestations of these species almost exclusively require herbicide application to control. However, mowing and tilling can be effective control methods for Canada thistle and musk thistle. Mowing, brush cutting and “weed eating” are more effective on annuals that are cut before they flower and set seed (TNC 2001). Some species re-sprout vigorously when cut, growing many more stems that can flower and set seed. Therefore the biology of the weed should be considered in areas where mowing and

cutting are considered. It is important to collect plant fragments of species capable of sprouting from stem or root segments to prevent them from washing or blowing into uninfested areas (TNC 2001).

Mulching Hay mulch has been used to control Canada thistle, using application several feet deep that reduced flowering rates (TNC 2001).

Tilling Tilling may be appropriate to use on areas that already have disturbed soils, such as construction sites. The best control is done when the soil remains dry, so the plant fragments do not resprout. Tilling should be done in 2 stages: a first tilling to turn over the soil and cut plant roots at 6" to 2' depths and a second tilling to work up just the top 6" of soil to control weeds.

Grazing Grazing may be considered on a site specific basis as a weed control option. Grazing may either promote or reduce weed abundance and used alone will not likely eradicate a noxious weed (TNC 2001). The use of this control technique should be determined by the weed species present and other site specifics. A grazing plan should be developed that considers timing and duration, management of animals-including fencing and herding, and the precaution of moving animals to or from an infested area, as the animals may introduce noxious weed species to the controlled area. Of the weed species listed for the delta project area, grazing has been used as a control tool for dock (*Rumex* sp., TNC 2001).

Prescribed Burning Prescribed burning may be an option which can be effective with herbicide use, although it can be ineffective on some weed species. Considerations to be made before using this method are: timing, level of disturbance of area, weed seed introduction via equipment, public safety, and possible impacts to surrounding lands. Prescribed burns of reed canarygrass during the growing season, may give other desirable native species a competitive edge (TNC 2001). Burning phragmites removes leaf litter allowing other species to germinate. Burning in conjunction with herbicide has been found to be effective in its control (TNC 2001). Spot burning can be effective on small infestations, and cheaper and easier to implement than a prescribed burn. Any prescribed burns should be done in coordination with Utah Division of Forestry, Fire and State Lands and Utah County.

Cultural Control Cultural control in the context of this plan is predominantly the planting of desired vegetation to prevent the reestablishment of noxious weeds after other control techniques are used successfully. For example, live willow plantings were found to reduce total biomass of reed canarygrass on a sloping wetland edge (Kim et al, 2006). This technique may not be effective long term, but may present the best option in environmentally sensitive sites. Mowing, tilling and burning are considered to be cultural controls by other sources, but they are described under the mechanical control techniques in this Plan.

Chemical Control Chemical control of weeds is accomplished with the use of herbicides, which impact plant species through a variety of mechanisms. A complete list of herbicides currently approved for use by the Mitigation Commission for weed control is available in Table 3. The Commission has identified the appropriate herbicide for weed control by land or habitat type, ie., riparian, wetlands and ponds, or upland areas. In riparian areas, or wetlands, the most commonly used products contain glyphosate 2,4-D Amine, or imazapyr as the active ingredient. Herbicide use is restricted where surface

water is present or below the high water mark unless the product is specific for control of plants in and around aquatic sites (eg., Rodeo, Commission 2012).

Glyphosate (N-(phosphonomethyl) glycine) is a broad spectrum nonselective systemic herbicide that kills or suppresses many grasses, forbs, vines shrubs and trees, and has been successful in phragmites and reed canarygrass control in preserves (TNC 2001). It is currently the most commonly used herbicide on Commission lands where noxious weed control is done in wetlands and near ponds (Commission 2013). Common formulations that are licensed or certified for use on or near water include: Rodeo, Aquamaster or Aqua neat. Label details for these and other herbicides are available in the Commission Integrated Pest Management Plan (Commission 2012). There are three herbicide products currently listed for use in wetland or pond areas in the Commission’s IPMP: Glypro, Rodeo, and Wedar 64.

2,4-D Amine is a synthetic growth hormone that kills the target weed by mimicking a plant growth hormone, causing uncontrolled and disorganized plant growth leading to plant death (TNC 2001). It is effective on many broadleaf weeds, but has no effect on grasses. It may be used to the water’s edge in wetland and pond areas from June to August, when weeds are actively growing. It is sprayed away from the water flow direction, so any drift that may reach the water surface is diluted to the maximum extent (see Weedar 64, Commission 2012).

Table 3. Herbicides included in the Mitigation Commission’s Integrated Pest Management Plan.

Common Name	Active Ingredient (s)	Manufacturer	EPA Registration #
Aquamaster	Glyphosate	Monsanto	524-343
Arsenal	Isopropylamine Salt of Imazapyr	BASF Corp.	241-346
Banvel	Dicamba	Micro Flo Co.	66330-276
Credit	Glyphosate	Nufarm.	71368-65
Escort	Methylsulfuron methyl	DuPont	23005
Escort & Weedar 64	Methylsulfuron methyl & 2,4-D Amine	DuPont & Nufarm	23005 & 71368-1
Escort & Weedmaster	Methylsulfuron methyl & 2,4-D Amine plus Dicamba	DuPont	23005 & 71368-34
Garlon 4	Triclopyr	Dow	62719-40
Glypro	Glyphosate	Dow	62719-324
Milestone	Aminopyralid	Dow	62719-519
Oust XP & Plateau	Sulfometuron methyl & Imazapic-ammonium	Dupont & BASF Corp	352-601 & 241-365
Ramik Green Mini	Diphacinone	HACO Inc.	61282-48
Rodeo	Glyphosate	Monsanto	62719-324
Weedar 64	2,4-D Amine	Nufarm	71368-1
Weedar 64 & Banvel	2,4-D Amine & Dicamba	Nufarm & Micro Flo Co.	71368-1 & 66330-276
Weedmaster	2,4-D Amine plus Dicamba	BASF Corp.	71368-34

Imazapyr is marketed in compounds by the trade names of Arsenal and others. Imazapyr is a non-selective broad-spectrum systemic herbicide, absorbed by the foliage & roots, with rapid transfer to the meristematic regions, where it accumulates and causes disruption of protein synthesis. It is typically used to control grasses and woody species such as tamarisk. Herbicides containing imazapyr are listed for use in riparian and upland areas only in the Commission Integrated Pest Management Plan (Commission 2012). It is typically not sprayed on plants below the high water mark. It can be used as a fresh cut stump application on brush.

Herbicides are to be used in the project area with care and according to the Commission's Integrated Pest Management Plan (2012) and Pesticide Management Plan (revised 2013), when applied on or near waters of the State, under the Commission's General Permit. All applicators are to be state certified (Commission 2012). Procedures for stopping, containing and cleaning up leaks, spills and other releases of herbicides to waters of the state are included in the Commission's Revised Pesticide Management Plan (2013).

Integrated Methods As indicated in examples discussed in the above sections, a combination of control methods (physical, biological and chemical) are recommended for effective weed control that will have minimal long term impact on nontarget species.

The most effective control technique reported for reed canarygrass is a combination of glyphosate and disking or mowing treatments with a follow-up herbicide application during the next growing season (Kilbride and Pavaglio 1999).

Herbicide Treatment within Ute ladies'-tresses occurrence areas

In formal consultation with the U.S. Fish and Wildlife Service, the following herbicide treatment stipulations have been made for Ute ladies' –tresses occurrences within the project area:

1. Spot herbicide treatment only within Ute Ladies'-tresses occurrence areas or within 50 feet of Ute Ladies'-tresses occurrences.
2. Use short residual herbicides only within Ute Ladies'-tresses occurrences.
3. Do not use glyphosate, or long residual herbicides (Tordon, Banvel, or DuPont's new Perspective).
4. Apply herbicides in the spring or fall months and not within the Ute Ladies'-tresses flowering or fruiting time period (July 1 – October 15).
5. Avoid or minimize the use of heavy machinery within Ute Ladies'-tresses occurrences. Use existing roads to the extent possible.

Incorporate the following herbicide treatment recommendations for specific weeds in Ute Ladies'-tresses occurrence areas:

- Hoary Cress (*Cardaria draba*) – 2,4-D
- Squarrose knapweed, *Centaurea virgate* Milestone as a fall treatment on rosettes or in very early spring.
- Russian knapweed, *Centaurea repens* Milestone in late fall
- Scotch thistle, *Onopordum acanthium* Milestone to rosettes in the fall
- Musk thistle, *Carduus nutans* Milestone to rosettes in the fall
- Leafy spurge, *Euphorbia esula* Paramount in the fall
- Perennial pepperweed, *Lepidium latifolium* 2,4-D. Don't use Telar or similar.
- Spotted knapweed, *Centaurea maculosa* Milestone would be the best as a fall treatment on rosettes or in very early spring.
- Purple loosestrife, *Lythrum salicaria* Milestone
- Dalmation toadflax, *Linaria genistifolia* No good option that will not harm orchids. Hand-pull only.
- Poison hemlock, *Conium maculatum* 2,4-D only. Do not use the ALS inhibitors such as Ally, Escort, Telar.
- Reed Canarygrass (*Phalaris arundinacea*), Grass specific herbicides such as sethoxydim or fluazifop.
- Also see commitments for Russian olive treatment previously listed.

Other Weeds and General Application Recommendations

For other specific weeds, please follow recommendations identified in Table 4 or the BLM Herbicide Programmatic EIS (http://www.blm.gov/wo/st/en/prog/more/veg_eis.html).

Table 4. Herbicide Buffer Distances from Terrestrial Plant Species Protected under the Endangered Species Act.

Active Ingredient	Buffer Width	Method(s) to Which Applied
2,4-D	0.5 mile	All
Bromacil	1,200 feet	All
Chlorsulfuron	1,200 feet	Ground
	1,500 feet	Aerial
Clopyralid	900 feet	Ground, typical rate
	0.5 mile	Ground, maximum rate; aerial
Dicamba	1,050 feet	Ground
Diflufenzopyr	100 feet	Low boom, typical rate
	500 feet	Low boom, maximum rate; high boom
	900 feet	Aerial
Diquat	900 feet	Ground, typical rate
	1,000 feet	Ground, maximum rate
	1,200 feet	Aerial
Diuron	1,100 feet	All

Fluridone	0.5 mile	All
Glyphosate	50 feet	Ground, typical rate
	300 feet	Ground, maximum rate; aerial
Hexazinone	300 feet	Ground, typical rate
	900 feet	Ground, maximum rate
Imazapic	25 feet	Ground, typical or maximum rates
	300 feet	Aerial, typical rate
	900 feet	Aerial, maximum rate
Imazapyr	900 feet	Ground or aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate
Metsulfuron Methyl	900 feet	Ground or aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate
Overdrive®	100 feet	Low boom, typical rate
	900 feet	Low boom, maximum rate; high boom
Picloram	0.5 mile	All
Sulfometuron Methyl	1,500 feet	All
Tebuthiuron	25 feet	Low boom, typical rate
	50 feet	Low boom, maximum rate; high boom, typical rate
	900 feet	High boom, maximum rate
Triclopyr	300 feet	Ground, typical rate
	500 feet	Aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate

Source: BLM 2007.

Monitoring and Maintenance

Annual monitoring and follow up treatment of weeds where needed, will be completed within the project area. The goal of the monitoring is to document progress of vegetation management on the delta. Monitoring will be done through plant community survey, photographic documentation and inventory of wetlands. Monitoring sites will be established in areas affected by various project actions, such as dike/berm removal, removal of grazing, and channel construction, among others.

The plant community surveys will be conducted in August of each year and consist of the following information: relative cover of hydrophytic vegetation in each stratum (tree, shrub and herb); species richness in each stratum; dominant species in each stratum; relative cover of weedy species; soil stability; site hydrology; overall assessment of wetland sustainability; Area (% of site) dominated by hydrophytic vegetation; and wildlife use. A permanent transect formed by the longest axis of the monitoring site will be the basis of data collection. The location and number of transects may be adjusted to reflect the size and shape of each site and the variability encountered in each site.

The plant community survey data will be used to identify areas where intervention is needed. Corrective action can be initiated and site management recommendations, such as weed control activities, prescribed.

Photographic documentation will be conducted at recommended stations until success criteria are reached. Photos will be taken during each plant community survey in August. The photographs may be used to document the yearly variation over areas of the delta project and the wetland development progress.

While the plant community survey and photography will document the progress of wetland development and provide information with which to manage the area, the Mitigation Commission proposes that wetland delineation serve as the final measure of the project success. The Mitigation Commission will conduct a delineation of areas where hydrologic conditions have been sufficient to support a prevalence of hydrophytic vegetation once construction is substantially complete.

The extent of wetlands within the project area will be determined utilizing aerial photo interpretation, data that may be available from other sources (e.g. soil survey information, previous wetland delineations and NWI maps), and field reconnaissance. Wetland delineations will be mapped (digitized from orthophoto maps) using the ArcView GIS. In addition, data layers to be imported into the GIS include the present extent of jurisdictional wetlands and areas of proposed wetland creation, enhancement, conversion and temporary impact. The results of this monitoring effort will be included in subsequent annual reports.

Any additional permit-related monitoring requirements, eg., Army Corps of Engineers 404 permitting, or State Division of Water Quality UPDES General permit No UTG170000 for pesticide use (such as acres along waters of the state treated with herbicides/year) will be implemented within the delta project area as well.

Maintenance weed control activities will be coordinated with other Utah Lake efforts by the Utah Lake Commission, Utah State Lands Division and Utah County Public Works.

Reports and Data Management

Data will be recorded on standardized field forms and maintained in Mitigation Commission files. Reports will be written annually and maintained by the Mitigation Commission or other JSRIP entity responsible for management. These will serve as the basis for future management activities and planning for the delta project area.

References

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PROVO RIVER DELTA RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix C: Mosquito Management Plan

**Mosquito Management Plan
for the Proposed
Provo River Delta Restoration
Project**

**Utah Reclamation Mitigation and
Conservation Commission
2015**

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Introduction

The Provo River Delta Restoration Project is a multi-agency effort proposed to restore the Provo River delta at Utah Lake. The proposed project would restore historical habitat in the lower Provo River that is essential for spawning, hatching, larval transport, survival, rearing and recruitment of the June sucker population on a self-sustaining basis. The proposed project would include releasing the Provo River from its current channelized location and allowing it to flow to the north, where a delta ecosystem would be restored to provide the diverse habitat required for June sucker recovery. This action is being undertaken specifically to address the problem of lack of natural recruitment by June sucker, an endangered fish species, in Utah Lake. It responds directly to requirements of the June Sucker Recovery Plan (USFWS 1999) and the June Sucker Recovery Implementation Program (JSRIP) (CUWCD 2002).

Alternatives proposed for consideration are all located in the study area (Figure 1); which is generally north of the existing Provo River channel and west of 3100 West in Utah County, Utah.

Lands in the study area are already capable of producing significant numbers of mosquitoes, and abatement efforts are currently implemented in the study area. However, any of the three action alternatives would increase the size and duration of shallow water areas capable of producing mosquitos. The Joint Lead Agencies (made up of the Department of the Interior, Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District), have committed to mitigate for the increased mosquito breeding habitat and associated increased risk of mosquito borne disease by developing and implementing a Mosquito Management Plan. Under the plan, potential mosquito producing habitat within the project boundary would be monitored and treated with larvicide. The PRDRP Project may carry out larval monitoring and control through the JSRIP or through arrangement with Utah County Health Department or other third-party entity. Currently, mosquito producing habitat within the project area is monitored and treated by the Utah County Health Department.

The Provo River Delta Restoration Project (PRDRP) area is located in the Provo Orem Mosquito District of Utah County (Figure 2). The Utah County Health Department uses an integrated pest management (IPM) approach to mosquito control. This approach includes weekly monitoring, species identification, action thresholds for treatment, biological control, larval and adult mosquito control with pesticides. Even though the project will result in an increase in potential mosquito producing habitat, implementation of the Mosquito Management Plan should reduce the risk of mosquito borne disease to pre-PRDRP Project levels, or lower.

Objectives There are three important objectives that are addressed by this Mosquito Management Plan. The principal objective is to formally address mosquito borne disease, including West Nile Virus, and its associated public health threat to communities on or adjacent to the Project Area. The second objective is to develop and implement a mosquito management plan that includes Integrated Pest Management, social and environmentally responsible management controls and comprehensive data management.

And the final objective is to develop and implement an Outreach and Education protocol within the scope of this Mosquito Management Plan.

Implementation of the Mosquito Management Plan consists of three primary components. All three components are to be implemented concurrently but at varying levels of intensity, depending upon the time of the year, threat levels and other factors. The three components are

- **Larval Mosquito Monitoring and Control,**
- **Adult Mosquito Monitoring and Control, and**
- **Communication and Education.**

The proposed cooperative approach to mosquito management associated with the Provo River Delta Restoration Project would be implemented as follows:

1. Larval monitoring and control: Responsibility of PRDRP Project, in consultation with Utah County Health Department. This could be contracted to Utah County Health Department or other third-party entity.
2. Adult Mosquito Monitoring and Control: Responsibility of Utah County Health Department with cooperation and assistance from PRDRP Project
3. Communication and Education: Cooperative effort among PRDRP Project, Utah County Health Department, and others.

The Mitigation Commission conducts mosquito control on mitigation properties under the auspices of the Utah Pollution Discharge Elimination System (UPDES) general permit number UTG170000, administered by the Utah Division of Water Quality, Department of Environmental Quality. This Mosquito Management Plan has been developed in coordination with the Commission's Pesticide Management Plan (Mitigation Commission 2013) as required under the UPDES permit.

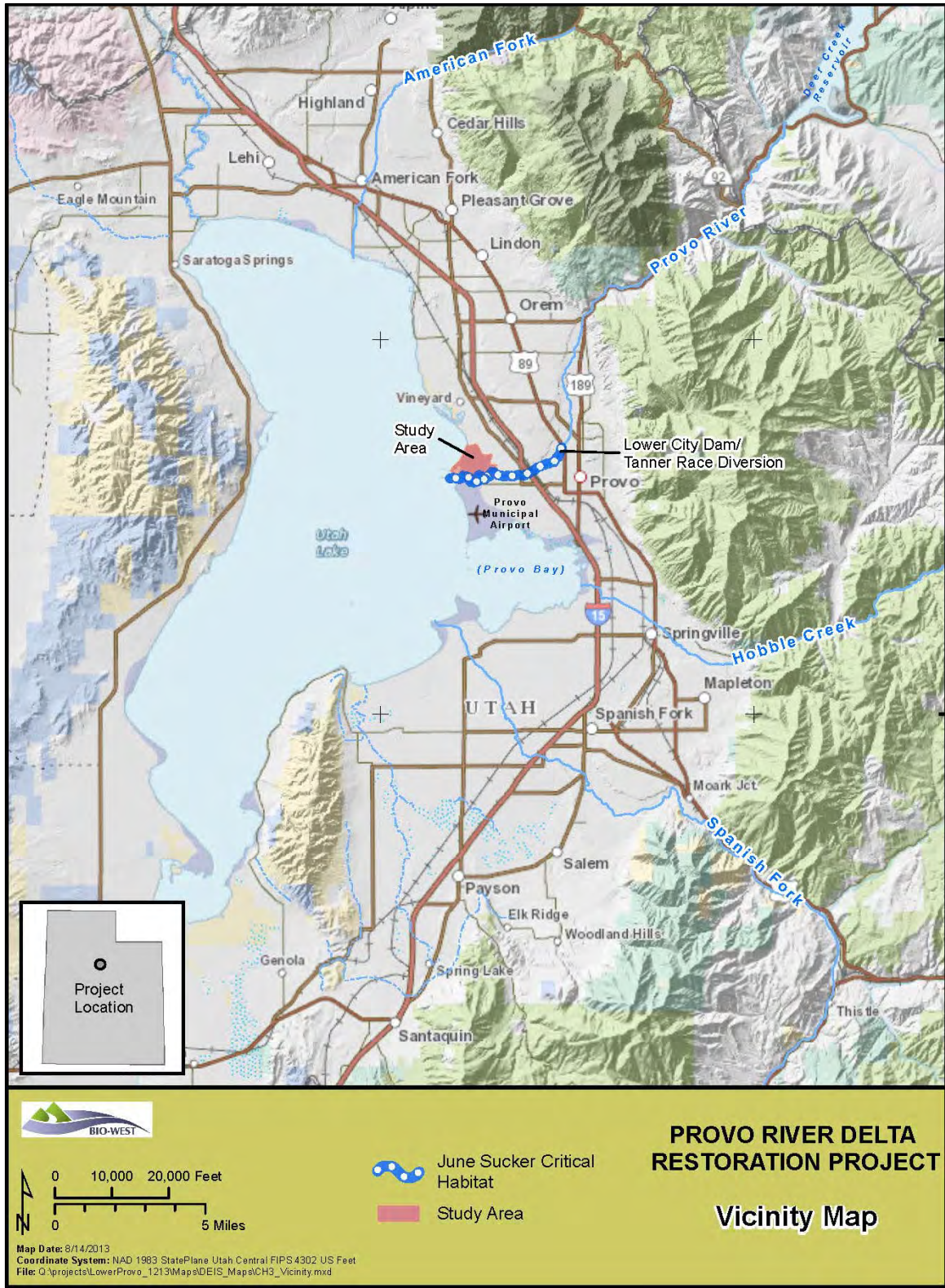


Figure 1. Study area location in Utah County, Utah.

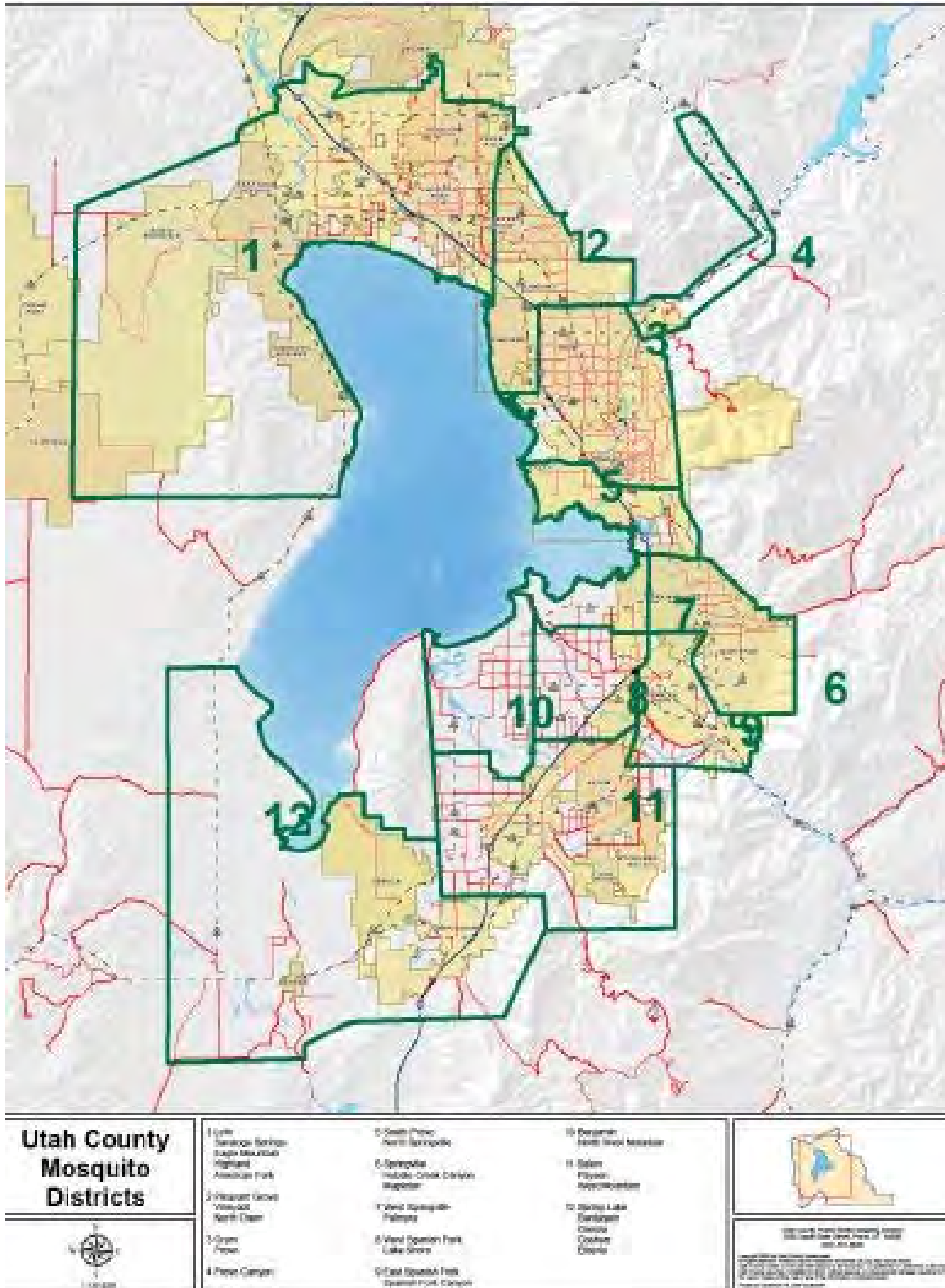


Figure 2. Utah County Mosquito Districts, from the Utah County Larval Mosquito Control Document (Source: www.utahcountyonline.org).

Background

Mosquito management has increasingly become a significant concern regarding social welfare, agricultural industry and natural resource management. Of particular concern is mosquito borne illness. The presence of mosquito transmitted disease throughout Utah has incited social anxiety and initiated a public appeal for increased control and management of mosquito populations. There are three species of mosquitoes that are known to effectively transmit disease, namely Arboviruses, to humans: *Culex tarsalis*, *Culex pipiens* and *Culex erythrothorax*. The third species, *erythrothorax*, more commonly bites birds and has been found to be infected with the West Nile Virus (WNV, Phillips and Christensen, 2006). WNV and Encephalitis are Arboviruses that are transmitted mainly by mosquitoes and produce a significant threat to human health. Utah County has had WNV-positive mosquito samples for all three *Culex* species, mostly *tarsalis*, some *pipiens* and *erthyothorax* (R. Mower, Utah County Health Department, personal communication).

In an effort to address, control and manage this threat, the Mitigation Commission has developed this Mosquito Management Plan. The Mosquito Management Plan is intended to be a living document and although developed specifically for the Provo River Delta Restoration Project, it was also developed with the anticipation of a County-wide, cooperative management approach. Consideration will be made to incorporate any coordinated cooperation, consultation, technical assistance and training from local and/or county Departments of Health or Mosquito Abatement Districts (MAD). Mosquito control on the Delta Restoration Project will be implemented using an Integrated Pest Management (IPM) model that is consistent with mosquito control measures recommended by the U.S. Centers for Disease Control (CDC). According to the CDC,

“Prevention and control of arboviral diseases is accomplished most effectively through a comprehensive, integrated mosquito management program using sound integrated pest management (IPM) principles. IPM is based on an understanding of the underlying biology of the transmission system, and utilizes regular monitoring to determine if and when interventions are needed to keep pest numbers below levels at which intolerable levels of damage, annoyance, or disease occur. IPM-based systems employ a variety of physical, mechanical, cultural, biological and educational measures, singly or in appropriate combination, to attain the desired pest population control.” (CDC 2003, p.27).

In addition, the CDC recommends that mosquito control plans include each of the following:

- Ecological Monitoring/Surveillance of mosquitoes and intermediate hosts.
- Physical, Chemical and Biological control measures.
- Public Education and Outreach development, including personal protection information.
- Emergency West Nile Virus (WNV) Management using a Phased Control Approach.

The Mosquito Management Plan addresses each of these recommended plan elements and details how they will be implemented.

Mosquito Biology

Mosquitoes develop through four stages in their life cycle (see Figure 3). Appropriate mosquito control methods vary according to mosquito life cycle stage. The diagram below (Figure 3) shows how each of the WNV control methods would be used as part of an IPM approach. The life cycle details are adapted from Clements (2000), Knight et al. (2003) and Marra et al. (2004). The diagram is from AMCA (2005).

Eggs All mosquitoes must develop in water before they can fly. The adult female mosquito, after taking a blood meal, will search for a place to lay her eggs. *Culex* mosquitoes lay eggs in clusters, also called egg rafts, on the water's surface. *C. tarsalis* lay eggs in rafts on the surface of permanent and semi-permanent clear ground pools, springs, and ditches. In late summer, they also lay eggs in temporary pools and containers that contain standing water. *C. pipiens* use standing or slow-moving water that contains decaying organic materials to lay their eggs. *C. erthrothorax* develop in deeper water with heavy vegetation, such as Phragmites.

Larvae Larvae develop in shallow water. They have four growth stages known as instars. They are found in the water hanging head down just below the surface because the larvae breathe through a respiratory siphon at the tail end of their body that breaks the surface of the water. Larvae grow to be approximately 0.5 inch long by the fourth instar.

The larvae of *C. tarsalis* and *C. pipiens* are found in somewhat different habitats. *C. tarsalis* larvae are found in a wide variety of semi-permanent and permanent sources of water in both rural and urban areas. They occupy a wide variety of either fresh or polluted water habitats, usually in open, sunlit locations. In contrast, *C. pipiens* larvae are found in a wide variety of natural and artificial sources of water that often are highly polluted with organic wastes. They have been found in containers of various types, catch basins, ornamental pools, cesspools, swimming pools that are not completely drained, ditches, and tree holes.

Pupae At the end of the fourth instar, the larva molts into a pupa. The pupa is a cocoon-like stage when the adult mosquito is forming. This stage typically lasts about 2 days; however, the amount of time spent in the pupa may vary depending on water's temperature. The mosquito does not feed during the pupa stage, but when disturbed, will tumble as it avoids danger.

Adult When the adult is fully formed, it breaks through and emerges from the pupal skin. It rests for a short time on the water surface while its wings expand and dry. Male mosquitoes usually emerge first and form a swarm where they will mate with females as they emerge from their pupae. Females mate only once and store sperm in their bodies to fertilize their eggs as they are laid. Once the female has mated, she flies off in search of a blood meal to obtain the proteins necessary for laying eggs. Males and females feed on plant nectar for energy.

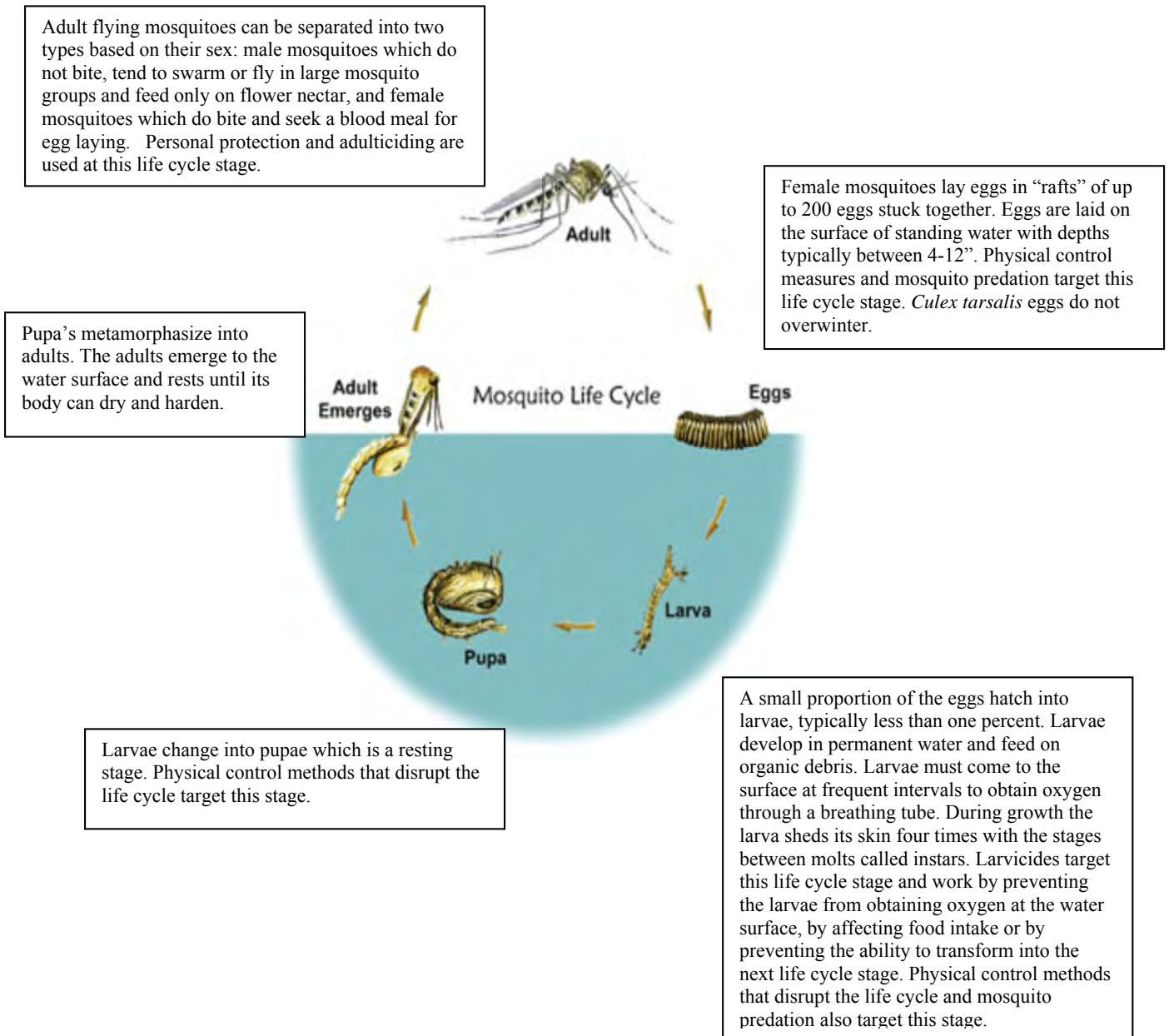


Figure 3. Mosquito control methods in relation to the *Culex tarsalis* life cycle.

A number of factors influence the blood feeding of the adult female. They include humidity, wind, temperature, light, and animal emanations (such as respiration or body heat). For most mosquitoes, the primary period for feeding on blood is between sunset and midnight (generally between 9 pm and midnight in Utah County) during the summer. A minimal feeding period may occur in the morning, mostly with *Ochlerotatus increpitus*, some *Ochlerotatus dorsalis*, both nuisance mosquitoes, in June. Rotator trap data for Utah County has indicated that this feeding peak is very low. This feeding behavior may change during the spring and fall, when daytime conditions favor mosquito activity over evening conditions. Temperatures above 55 degrees F and humidity levels at or in excess of 70 percent are optimum feeding conditions.

Mosquitoes of the genus *Culex* can overwinter as gravid (egg bearing) females. This characteristic results in populations that are low in numbers in the spring but peak in Utah County during late July and early August (July 24-1st week of August). Because the populations of mosquitoes increase greatly late in the summer, potential vectors and disease transmission are most prevalent at this time.

C. tarsalis breeds several generations per year. Females overwinter in protected places, including caves, abandoned mines, and cellars. Adults prefer to feed on birds, but will bite humans and other mammals. Feeding occurs near dusk and after dark. Its life cycle varies from 4 days to 30 days, depending on conditions. *C. tarsalis* commonly travels up to 2 miles for a blood meal. Collections have been made at elevations up to 10,000 feet.

C. pipiens females hibernate in cellars, basements, and other protected sites. Birds are the major hosts of *C. pipiens* because it takes blood meals from them more than 95 percent of the time. Mammals constitute the rest, with humans representing less than 1 percent of the total.

C. tarsalis is probably the main carrier of WNV because of its affinity to take blood meals from birds. At least 120 bird species and eight mammal species have been infected nationwide. Corvids (crows, magpies, ravens, and jays) seem to be affected more than other species; however, because many corvids die when infected, they are not an ideal host for the virus. Other species, such as house sparrows, do not seem to die as readily when infected and are therefore a more effective host for the virus.

C. erthrocercus - This species develops in deeper water of heavy vegetation. Larvae usually over winter and adults are common from July-mid Sept; their populations peak in late summer, August to early September. They can be aggressive biters in late afternoon to early evening particularly when disturbing vegetation in this habitat.

Ochlerotatus increpitus, a nuisance mosquito, is a late spring species that breeds in trapped waters created by Utah Lake level fluctuations, along the edges of the phragmites stands. This mosquito, an evening biter, peaks in late spring and is usually gone by early July.

Larval Habitat Mosquitoes successfully inhabit almost every kind of collection of water. A breeding site can be any place that will hold water for a week or more after rainfall. Prime breeding sites include marsh edges, short-grass ditches, tire ruts, hoof prints, discarded tires left outdoors, poorly maintained bird baths, holes in trees, clogged rain gutters, unused swimming and plastic wading pools, and pots and pans with standing water, and many other habitats that will hold stagnant water. The most prolific breeding sites are probably flood-irrigated lands, and seasonally wet/dry locations when stagnant water is present.

Some areas that do not support mosquitoes include moving water (rivers, streams, and creeks), deeper lakes, and ponds. Other conditions that are unfavorable for breeding of mosquitoes are turbulence and the presence of natural predators.

Adult Habitat In the daytime, adult mosquitoes avoid adverse environmental conditions, such as intense heat, by taking refuge in resting areas known as “harborage sites”. Typically, these resting areas are composed of natural vegetation, including forests, tree stands, grass, shrubs, or other foliage. Ideal resting areas are generally shaded with cooler daytime temperatures and high relative humidity. These conditions are typically found in forests or tree stands that have a canopy, and dense underbrush. Wetlands also may be present nearby. Other resting sites include culverts, hollow logs, areas underneath decks, shaded sides of buildings, basements, and garages.

West Nile Virus West Nile Virus was first observed in Africa in 1937. Its primary mode of transportation is through birds over long distances, and mosquitoes. The first discovery of West Nile Virus in the United States was in New York State in 1999. After that time, the disease continued to move across the United States. By August 2003, the virus had crossed the continental divide and established in Utah. Since 2003, the number of WNV human cases in Utah has peaked at 158 in 2006. Of these, 66 occurred in Utah County. Since then, Utah County has reported 2 human cases in 2007, 1 in 2008 and none during the 2009-2013 period (www.utahcountyonline.org May, 2012).

Integrated Pest Management This Mosquito Management Plan has been developed using an IPM model that will provide direction for managing pest and nuisance problems including weeds, insects, and animals on public lands. IPM is a science-based, common-sense approach for managing insects, rodents, or other vectors. IPM uses a variety of pest management techniques that focus on pest prevention, pest reduction, and the elimination of conditions that lead to pest infestations. IPM manages pests and disease vectors by managing the environment to eliminate their food, water, and shelter. For IPM to succeed, environmental health specialists must take into account the behavior and ecology of the target pest, the environment in which it is active, changes that occur in the environment, and the activities of people who share the environment.

Although IPM includes some standard pest control techniques, the four components of IPM add to them. Those four components are

- **Inspection:** examination of indoor and outdoor areas to identify what, where, and why pests are active. A major inspection is done at the start of an IPM program; minor inspections occur throughout an IPM program.
- **Monitoring:** verification of pest presence or absence. Monitoring includes direct observation of pests; and collection of pests in traps.
- **Treatment:** corrective actions or interventions to reduce the number of pests. Education to change people's behavior is the most important part of an effective IPM program. Cleaning, sanitation, and keeping pests out are effective over the long term.
- **Evaluation:** follow-up to determine whether treatments are successful and what should be done next. Evaluation is one of the most critical components of an IPM plan.

Control Methods

Physical Methods

There are a number of physical measures that can be used to physically modify/reduce mosquito breeding habitat in or near wetlands. The CDC recommends two general source reduction types: (1) sanitation or cleaning of human by-products that can contribute to mosquito habitat, and (2) water management. Specific measures that may assist in wetland source reduction include:

- Increasing interspersion of open water with emergent marsh which allows greater access for mosquito control and reduces breeding/hiding habitat
- Increasing open water depth and incorporation of plant-free zones which provide habitat for predators
- Restoration of a healthy aquatic food chain
- Use of a flow-through system. "The flow of water through a wetland (and its related volumetric turnover rate) will help reduce mosquito production ... not by flushing out the larvae *per se*, but rather through helping to eliminate the accumulation of stagnant, organically-rich waters that attract standing water mosquitoes such as *Culex*, and to maintain good water quality (e.g., high oxygen levels, removal of toxic metabolites) to ensure survival of mosquito-larvae predators." (Meredith and Walton 2005).
- Improving water quality as there are numerous correlations between increased mosquito production and poor water quality, especially water high in organic material, low in dissolved oxygen (DO), high temperatures; additionally, the effect of larvicides on mosquitoes can be reduced in areas of low water quality.

- Site selection “Sites with a pre-existing land use that is favorable for mosquito production should be ranked higher for selection [for wetlands] than sites without existing mosquito problems. ... This will result in the lowest net effect of the project on increasing mosquito populations” (Knight et al 2003).
- Manipulation of mosquito habitats involves water management strategies to eliminate mosquito breeding areas and can include activities such as filling in or improving drainage in certain areas, or pumping water out of low-lying areas. Manipulation can change the function of the mosquito habitat and can affect the ecological integrity of the wetland ecosystem.

Chemical Methods

The application of pesticides, such as those listed below, is one of the treatment methods for larval and adult mosquito control. It is believed that pesticide treatment helps contain and minimize the threat of WNV infection in humans. Adverse impacts to areas being treated will be minimized by applying pesticides at the recommended concentrations. The most commonly used pesticides include:

- Bacterial toxins such as Bti, which are ingested by mosquito larvae and are specific to mosquito larvae. The documented threats of WNV infecting residents outweigh the impacts of this bacterium on the areas where it would be used.
- Mosquitodal oils such as Agnique kill larvae by interfering with their air intake at the water surface; these oils generally volatilize within 48 hours.
- Insect juvenile growth hormones such as methoprene, which prevent larvae from molting into adults.
- Organophosphates such as Temephos, affect the central nervous system.
- Permethrin is an adulticide that acts on the insect nervous system, causing muscles to spasm, resulting in paralysis and death.
- Malathion and Naled are organophosphate adulticides that also act on the nervous system, resulting in overstimulation of the nervous system.

See Appendix B for product details. Pesticides will be applied in accordance with recommendations of the manufacturer. Treatment areas will be monitored to evaluate the efficacy of control operations.

Bacillus thuringiensis

Bti is a microbial insecticide formulated for use to control mosquito larvae in aquatic habitats. The product is manufactured as corncob granules and is applied by hand or by using hand-held seeders (spreaders) and power spreaders. Bti is an augmentative

biological control agent formed from bacterium (*Bacillus thuringiensis*) that occurs naturally in soils. The bacterium produces protein crystal protoxins during the formation of spores that disrupt bodily functions in some insects. The active ingredient of Bti is called a crystalline delta-endotoxin. Live bacteria are not contained in Bti, the active ingredient is separated from the bacteria that are killed in a laboratory. When ingested by the mosquito larvae, the protoxins dissolve in the intestine and the delta-endotoxin reacts with the stomach secretions. The cells in the gut then become paralyzed, interfering with normal digestion and triggering the insect to stop feeding. Death typically occurs within a few hours of ingestion.

Bti adversely affects larval stages of species in the Order Diptera, Suborder Nematocera, Family Culicidae (mosquitoes). Research and field experiments have shown that Bti has no toxic effects on beneficial and predacious arthropods or insects such as honeybees, beetles, mayflies, dragonflies, damselflies, stoneflies, caddisflies and true bugs. In addition, Diptera (true flies and midges) *Chaoborus* species, *Ephydra riparia*, *Musca domestica*, *Odontomyia* species, and *Polypedilum* species demonstrated no susceptibility to Bti. It has been determined that variable mortality did occur among *Chrironomus pulmosus*, *Chrironomus stigmaterus*, *Dixa* species, *Goeldchironomus holoprasinus* and *Palpomyia* species. Low levels of toxicity were also observed among a few species of butterflies and moths, but no toxic effects occurred in crustaceans or amphibians. (Lacey and Merritt, 2003)

Using Bti to control larval mosquitoes offers several advantages. First, its residual lasts only 24 hours in water, and it breaks down rapidly as a result of exposure to ultraviolet light. Second, it does not affect nontarget vertebrate species, such as fish and birds. Third, the bacterium kills the mosquito larvae, which can be observed the same day of application. A negative effect is that part of the food chain is temporarily removed by killing the larvae and possibly other dipterans, potentially affecting predators by removing a source of food. However, because Bti does not last long in water, adult mosquitoes and other dipterans could lay eggs in the treated water 24 hours after a treatment, and larvae could develop to provide another source of food to predators. Treatments are usually made after the larvae have been available to predators for up to two days of the normal four to five day larval stage. The usual application rate used for Bti is 5 pounds/acre or 0.2 acres treated per 1.0 pound of Bti.

Bacillus sphaericus

Bacillus sphaericus (Bs) is a bacterium that occurs naturally in soil and contains protein crystals and living spores with larvicidal abilities similar to Bti. The toxin is active only against the feeding larval stages and must be partially digested before it becomes activated. During digestion, larval enzymes dissolve the crystals into protoxins, which are smaller crystals. These protoxins then paralyze the gut and break through pores in the gut wall within a few hours to invade the body cavity and multiply. The mosquito larvae will die within 48 to 72 hours allowing predators a minimum of 2 days of the normal 4 to 5 day predation window.

Bs adversely affects larval stages of insect species in the Order Diptera, Suborder Nematocera, Family Culicidae. Bs is specific in causing mortality to mosquito larvae. *Culex* species are the most sensitive to Bs. In contrast to Bti, Bs is virtually non-toxic to black flies. Mammals and other non-target species are unaffected by applications of Bs.

Bs is similar to Bti in that it is a bacterium, but the differences are significant. Bs kills the mosquito larvae, and results may be observed within two days of treatment. Bs also has demonstrated efficacy in controlling mosquito larvae in highly organic aquatic environments, including sewage-waste lagoons and septic ditches.

The residual time for Bs in water is 2 to 4 weeks before retreatment is necessary. Bs has the ability to release fresh spores into the water column and recycle itself offering residual control, but also having extended effects to nontarget organisms. Mosquitoes have been shown to develop resistance to Bs, which reduces its effectiveness. Eggs that are laid within 4 weeks of treatment still have the potential to be affected by Bs, causing a break in the food chain that lasts longer than with Bti.

Methoprene

Methoprene is a hormonal insect growth regulator (IGR), not a bacterium. However, it does not immediately kill the mosquito larvae. The IGR is a copy of the juvenile hormone in the mosquito. The hormone prevents complete metamorphosis by disrupting the molting process and does not allow the larvae to develop into an adult causing the mosquito to die at the pupa stage. Methoprene allows the larvae to remain in the food chain, but prevents the emergence of adult mosquitoes that bite and breed. The methoprene is added to the water and absorbed through the larval exoskeleton.

Use of methoprene in wetlands poses two identified potential impacts. First, it affects more nontarget species including fish and aquatic invertebrates. Second, the residual time for methoprene in water varies depending on the form of the product used: 21 days (sand), 30 days (pellet), or 150 days (briquette). This longer residual time may pose a risk to the biological function of wetlands.

Synthetic Pyrethroids

These products cause rapid knockdown of adult mosquitoes and are typically mixed with a synergist compound, such as piperonyl butoxide, which enhances the effectiveness of the active ingredient. They exhibit low mammalian toxicity, degrade rapidly in sunlight, leave little or no residue, and do not bioaccumulate in the environment. Dosage rates can be low to control mosquitoes. These products are applied in small quantities per acre, referred to as ultra-low volume (ULV) application. ULV delivery techniques minimize environmental impacts at the same time they effectively manage populations of adult mosquitoes. Synthetic pyrethroids are effective in killing mosquitoes, gnats, biting and non-biting midges, black flies, and other biting flies. These insecticides readily bind to soil and other organic particles; however, they are degraded by sunlight in water and on soil surfaces.

According to the EPA, pyrethroids can be used for public health mosquito control programs without posing unreasonable risks to human health when applied according to the label. However, they are considered to pose slight risks of acute toxicity to humans, and at high doses, pyrethroids can affect the nervous system. According to the CDC, people who are concerned about exposure to a pesticide, such as those with chemical sensitivity or breathing conditions such as asthma can reduce their potential for exposure by staying indoors during the application period (typically nighttime). Pyrethroids are extremely toxic to aquatic organisms; however, recommended manufacturer dosage rates control the toxicity of these products to non-target species. Lobster, shrimp, mayfly nymphs, and zooplankton are the most susceptible non-target aquatic organisms. Some permethrin based mosquito control products direct the user not to apply the product within 100 feet of lakes or streams. This restriction or “buffer zone” was put on many permethrin labels out of concern for aquatic toxicity that might result due to runoff from agricultural sites, not as a result of an assessment of risks associated with the significantly lower concentrations of the active ingredient involved in ULV mosquito control applications. Resmethrin product labels state “Avoid direct application over lakes, ponds and streams” (emphasis added), but the same labels state that vegetation “around stagnant pools, marshy areas, ponds and shorelines may be treated” and there is no buffer zone requirement.

Oils or Monomolecular Surface Films

The application of oils to water is not species specific; however, products containing mineral oil such as Bonide Oil, or a monomolecular surface film such as Agnique have been used to control mosquitoes. Oils or surface films are used to mainly treat mosquitoes in the pupal stage. Gilled aquatic insects are apparently not affected by oil treatments, but they are lethal to most surface-breathing aquatic insects or those that depend on a breathing tube. The oil causes them to suffocate. The monomolecular surface films are effective by reducing surface tension on the water, which prevents larvae or pupae from hanging from the surface. This action causes them to drown. There is also the potential for flying insects that land on the water to be impacted, but this has not been studied comprehensively.

The U.S. Environmental Protection Agency’s (EPA) Office of Pesticide Programs is responsible for ensuring that a pesticide will not pose unreasonable adverse effects to human health and the environment. To prevent and minimize the impacts of pesticides on fish, wildlife and plants, the U.S. Fish and Wildlife Service provides technical assistance and consults with the EPA during registration and re-registration of pesticides.

Biological Methods

Biological control, or Biocontrol, is the use of other organisms to control mosquitoes. There is no known effective biological control for adult mosquitoes (Gonsalves, et. al., <http://www.rci.rutgers.edu/~insects/proprom.htm> accessed February 2015), so mosquito Biocontrol focuses on larval mosquitoes.

Predatory Aquatic Organisms

Predatory aquatic organisms may be introduced to reduce larval mosquito levels or to promote habitat development to sustain natural predators. Because of the potential adverse effects of some nonnative predatory fish on native fish, the use of introduced fishes for Biocontrol is not always feasible. However, development of habitat for native predatory invertebrates and vertebrates may be employed.

Larval Mosquito Monitoring and Control

As stated in the introduction, the proposed approach for larval monitoring and control will be the responsibility of PRDRP Project, in consultation with Utah County Health Department. The focus of this component of the plan is to treat the problem at its source, which is breeding mosquito habitat. The PRDRP Project may carry out larval monitoring and control through the JSRIP or through arrangement with Utah County Health Department or other third-party entity.

In Utah, *Culex tarsalis* and *Culex pipiens* mosquitoes are the primary contributors of WNV to humans. *Culex erythorhthorax*, while more commonly known to take blood meals from birds, will also bite humans, and has been found to carry WNV. All potential mosquito habitats do not necessarily possess breeding mosquitoes and further, not all habitats that breed mosquito larvae produce *Culex*. Therefore, it is proposed to differentiate between habitats and focus surveillance efforts at the sites where *Culex* mosquitoes have historically occurred and/or where *Culex* mosquitoes are more likely to occur during the mosquito breeding season. *Ochleratatus increpitus* is best identified in the laboratory. Mosquito habitats are categorized as follows:

Category I - Larval breeding sites: All sites where *mosquito* larvae have been found breeding

Category II- Potential larval breeding sites: All potential mosquito breeding sites that have not been found breeding any type of mosquitoes

The breeding sites been identified within the study area. The sites will be updated annually in coordination with the Utah County Health Department.

Category I sites will be monitored once per week in accordance with the Larval Mosquito Monitoring Schedule (Table 1) and the larval monitoring protocol described later in this document. Larval control measures at a particular site will be initiated when mosquito larvae are found.

Category II sites will be monitored once per week in accordance with the Larval Mosquito Monitoring Schedule and the larval monitoring protocol. When larval mosquitoes are found, the site will be reclassified as appropriate. Monitoring at a site may be discontinued if the site is dry and not reinitiated until breeding again becomes viable.

Table 1. Larval mosquito monitoring schedule.

	May	June	July	August	September
Category I	X	X	X	X	X
Category II		X	X	X	

This Mosquito Management Plan is designed for maximized vector control, as pre-peak and post-peak season *Culex* larval control will likely reduce *Culex* adults from emerging later in the season or even the following year (*Culex* can overwinter). Monitoring in Category III sites during peak *Culex* activity (as particular precipitation and temperature conditions could produce sites hospitable to *Culex* in places where they have not yet been observed) will further enhance WNV prevention, early detection and quality control as a measure of success in detecting fluctuating sources for *Culex*.

Methods

Water will be collected from each site, typically using a plastic dipper cup with a 3-foot wooden handle. Each sample (dip) will be examined for mosquito larvae presence. If mosquito larvae are present, an eyedropper may be used to collect a representative sample from the dip for verification of species. A representative sample consists of mosquito larvae with all the various instars (life stages) present. At sites that possess poor open water habitat in the center and good habitat around the perimeter, a *linear approach* (walking around the perimeter and sampling the margins) may be used to collect samples. At small sites (less than an acre) with good habitat, the dipping effort can be completed using *surface approach* where the entire site is methodically sampled.

- *linear approach*; sites 1 acre in size and less are dipped approximately every 20 feet; sites 1 to 10 acres are dipped approximately every 50 to 100 feet and sites greater than 10 acres are dipped approximately every 200 to 500 feet.
- *surface approach*; sites 1 acre in size and less are dipped approximately every 10 to 20 square feet. Since each project site varies in size, physical characteristics, and changes as the season progresses (e.g., becomes drier, wetter, increased vegetation), field adjustments may be made during the season concerning appropriate number of dips.

Larval mosquito control methods are designed to reduce the risk of WNV and nuisance mosquitos. The program’s focus for larval control is to identify where mosquito larvae are present before initiating control efforts. The threshold for control is the presence of any larval mosquito. The objective of larval mosquito control is to prevent the need for adult mosquito control, which is less effective than larval control.

Larval Control Protocol

If larval mosquitos are found during monitoring, the site will be treated with Bti or other approved larvacide. The application of Bti is the recommended method for larval mosquito control. Bti shall be applied in accordance with the manufacturer’s specifications. The usual application rate used for Bti is 5 pounds/acre or 0.2 acres treated

per 1.0 pound of Bti. Applicators use appropriate personal protection equipment (PPE) when applying the Bti in accordance with the manufacturer's specifications. All applicators should be certified, or have the appropriate training.

Adult Mosquito Monitoring and Control

For the adult mosquito monitoring and control on the PRDRP, this activity is the responsibility of Utah County Health Department with cooperation and assistance from PRDRP Project. Proper monitoring of adult mosquitoes, which includes testing for the presence of WNV, is important in guiding prevention and control because it can provide information on the potential threat to residents and can indicate areas where efforts to eliminate mosquitoes should be targeted.

Utah County Health Department conducts adult mosquito monitoring weekly for WNV in adult mosquito populations during the peak of *Culex* activity (June-August). Monitoring adult traps for WNV presence will occur earlier (May) or later (September) or more frequently than planned if data from local partner agencies indicate that there are early, rapidly increasing, or high sustained levels of *Culex* mosquito populations and/or early, elevated, or sustained cases of WNV present in birds and/or humans.

A communication network will serve as the best resource to make the most informed decisions on monitoring and control of WNV. Commission staff will coordinate and cooperate with the Utah County Health Department regarding the adult mosquito monitoring and control efforts.

Methods

Utah County Health Department monitors adult mosquito populations with the use of CDC mosquito traps (see Appendix A) at 15 locations in Utah County. In 2013, two additional trap sites were added within the delta project area, including one at Skipper Bay, see map in Appendix C for locations. The locations of adult mosquito traps are established to provide a thorough coverage area. These traps are based on the principle that most adult mosquitoes are attracted to CO₂, which is released from the traps. The trap collects adult female mosquitoes that are searching for a blood meal (Utah County Health Department 2012). This is one of the first indicators that WNV is likely to be transmitted to people through the vector mosquito.

The mosquitoes are removed from the traps and sorted by species to detect the vector mosquitoes that may be submitted for WNV testing. The *Culex* species are either sent to the Utah Public Health Laboratory for testing via a PCR method, which provides results in 1-4 days, or processed by the Utah County Health Department through a Rapid Analyte Measurement Platform (RAMP) test that provides results within 2 hours (Utah County Health Department 2012). Mosquito samples from adult traps are submitted and analyzed individually in order to determine a general area where WNV occurs.

Adult Control Protocol

The control of adult mosquitoes is the last option for reducing the threat of WNV. In theory, the ideal larval control plan would eliminate the need for control of adults.

However, the rapid development of mosquitoes from egg to adult and the persistent nature of breeding in an extensive variety of stagnant water bodies make complete elimination impossible.

The threshold recommended for adult mosquito control activities is 50 adult *Culex sp.* per trap (R. Mower, personal communication). A doubling or tripling of mosquito numbers in the traps is a better indicator (R. Mower, personal communication). Utah County bases their treatment on their data from peak mosquito production periods. The threshold used by the County is 1,000 *Culex* for all 15 trap sites. Once this threshold is reached, Utah County increases their Ultra Low Volume (ULV) fogging treatment, targeting areas where the trap numbers are high. Treatment by aerial application is also used in locations where ULV is not practical and WNV is an extreme threat. The PRDRP Project will cooperate with Utah County Health Department in developing and approving chemical treatment methods for adult mosquito control on the project.

WNV Detection

Upon reaching the adult mosquito control threshold described above, monitoring will continue with the following added activities:

- Application by truck-mounted fogger of adulticides to broader areas, based on monitoring data, and vehicle access, may be used, consistent with the Commission's Pesticide Management Plan (Commission 2013).
- Consideration of possible treatment by air, in consultation with the Utah County Health Department, to determine the appropriate timing and location.
- Adult mosquito trapping may be increased in the area of concern if additional monitoring data are required.
- Larval monitoring may be enhanced in affected areas if needed.
- Laboratory testing of adult mosquitoes will be a priority in affected areas.

Data from these additional collections will aid in evaluating the extent of pathogen transmission and mosquito populations and be used to guide control activities, where applicable. Monitoring data will be used to assess the risk of an outbreak of human disease and the need to apply pesticides in a targeted area to control adult mosquitoes. The control response will depend on a combination of thresholds being met that include, but are not limited to:

- The overall intensity of the WNV activity in adult *Culex* mosquitoes, humans, birds, and non-avian vertebrates.
- The time of year.

- Vector index level.
- Seasonal climate.

Communication and Education

Public education and outreach is essential in helping individuals understand WNV and will provide simple precautions that can be taken to help prevent a disease outbreak. Information presented should acknowledge the potential for disease but emphasize the responsibility of individual actions and the necessary measures to reduce health risks.

As a component of this Mosquito Management Plan, the Commission will endeavor to disseminate educational information to the public through established media such as local newspapers, local radio stations, or informational mailings delivered to the homes of residents living nearby.

The Commission will bring important information to the community on methods to reduce residential mosquito breeding areas and products that can repel mosquitoes and provide protection against their bites. It also conveys the concept of the IPM and the hierarchical steps in the integrated program. Familiarity with the IPM will help to clarify with residents of the area that many actions are conducted, often without their recognition, prior to escalating through the program to the last step of adulticiding which is the most visible mosquito control action.

Perhaps a greater benefit of the Program will be the delivery of educational information designed to compel citizens to help themselves. There are many steps citizens can take to protect themselves from mosquito bites. Self-help actions include:

- Protecting themselves and children from adult mosquitoes present by choosing appropriate clothing covering exposed skin to the greatest extent practical and applying mosquito repellants made with “DEET” or Picaridin in accordance with the label directions.
- Management of areas around the home where mosquitoes can lay eggs which would subsequently develop to larva, pupa, and then adult.
- Management of areas around the home where adult mosquitoes rest during the day which typically comprise of tall grass and weeds. Maintenance of tall grass and brush are an effective method of eliminating suitable resting habitats for many mosquito species.
- Avoidance of peak activity times for the WNV vectors or use of repellant during those times.
- Household protection by repairing or installing screens.

If adult mosquito monitoring and testing indicate high infection rates or if human cases of WNV have been reported, then the intensity, message and outlet of the Mosquito Education and Outreach Program shall vary accordingly.

Reporting

As a component of this Mosquito Management Plan, a Geographic Information System (GIS) will be developed to document and compile information on wetland areas, mosquito habitat, mosquito breeding data, adult trapping locations, etc. to aid in mosquito monitoring and control. The GIS will also provide a comprehensive mosquito database which will make data available for program development and data analysis.

The following data will be collected as part of the Mosquito Management Plan.

Larval Mosquito Monitoring

Potential mosquito breeding sites will be mapped and categorized on an annual basis. Sites will be re-categorized based on monitoring results.

All monitoring sites are assigned a unique Site Number. The following data is collected at each monitoring site for each monitoring event:

- Site no.
- Site Category
- Date of Sample
- Number of samples taken
- Sample submitted for Lab Testing (yes, no)
- Larval Mosquito ID (yes, no)
- Larvacide Applied (yes, no)
- Larvacide Type
- Larvacide Amount Applied

During the monitoring season, monitoring results are compiled weekly. Annual sampling results shall be maintained by the Mitigation Commission.

Adult Mosquito Monitoring

Adult mosquito collecting sites are mapped and maintained by the Utah County Health Department. The County will maintain their standard data for each collection site sample. Site location and sample collection within the PRDRP Project boundary will be coordinated with the Utah County Health Department.

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Appendix A- CDC Mosquito Trap

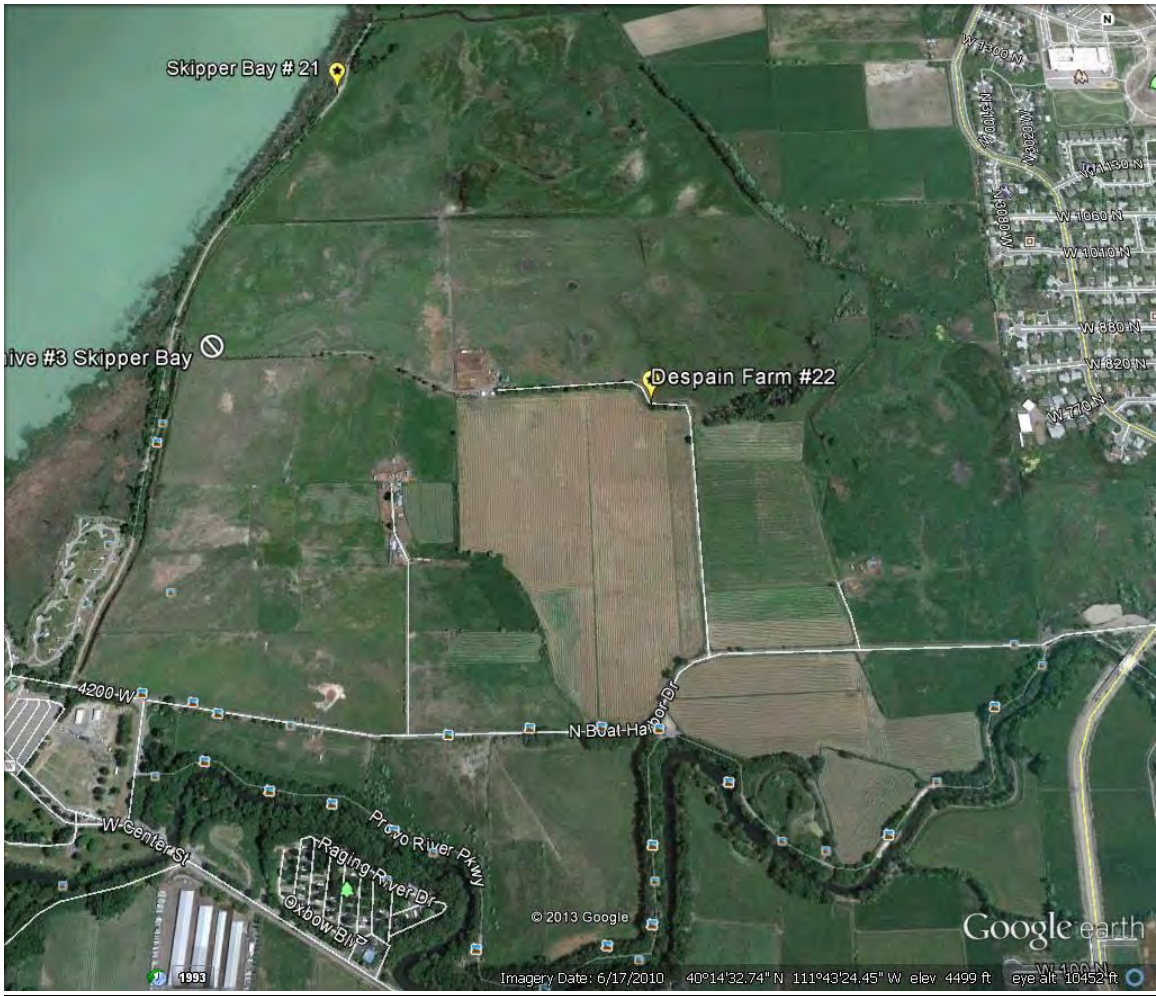


Source: Utah County Health Department, Mosquito Abatement.
<http://www.utahcountyonline.org/Dept2/Health/Mosquito%20Abatement/Documents/Surveillance%20For%20WVV.pdf>

Appendix B - Pesticide Details

Trade Name	Manufacturer	EPA Registration Number
Agnique (monomolecular surface film)	Cognis Corporation Cincinnati, OH	53263-28
Altosid (Methoprene) pellets, briquet or liquid	Zoecon Schaumburg, IL	2724-448 and others
Aqua reslin (Permethrin)	Bayer Environmental Science Research Triangle Park, NC	432-796
Dibrom (Naled, organophosphate)	Amvac Los Angeles, CA	2181-479
Golden Bear Mosquito larvicide oil GB - 1111	Witco Corporation Oildale, CA	8898-16
Pro Vect 1G (Temephos)	AllPro, VGS Bloominton, MN	769-723
Kontrol 4-4 (Permethrin)	Univar Austin, TX	73748-4
Trumpet (Naled, organophosphate)	Amvac Los Angeles, CA	5481-481
VectoBac and VectoLex (Bti) liquid and granular	Valent Biosciences Corp Libertyville, IL	73049-38 and others

Appendix C – Mosquito trap locations within the PRDRP area.



Appendix D – Summary of Mosquito Monitoring Data, 2013-2014.

Table D-1. Mosquito genus name abbreviation key.

Mosquito Genus	Abbreviation
Aedes	Ae.
Ochlerotatus	Oc.
Anopheles	An.
Culex	Cu.
Culeseta	Cs.
Coquillettia	Co.

Table D-2. Adult mosquito trap data, Despain Farm site, 2013.

Date	Ae. vexans	Oc. cam estris	Oc. dor salis	Oc. increpitus	Oc. melanimon	Oc. nigromaculis	An. free borni	Cx. erythrothorax	Cx. pipiens	Cx. tarsalis	Cs. inornata	Cs. Incdens	Co. perturbans	TOTALS
5/20/2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/27/2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/3/2013	0	0	0	0	0	1	0	0	0	3	0	0	0	4
6/10/2013	0	0	0	1	0	0	0	0	12	24	0	0	0	37
6/18/2013	1	0	0	0	0	0	0	0	4	66	0	0	0	71
6/24/2013	0	0	1	0	0	0	0	0	23	49	0	0	0	73
7/1/2013	1	0	1	0	0	0	0	0	21	23	0	0	0	46
7/8/2013	0	0	0	0	0	0	0	1	122	72	0	0	0	195
7/15/2013	2	0	0	0	0	0	0	0	412	53	2	0	0	469
7/22/2013	4	0	2	0	0	0	0	2	168	43	0	0	0	219
7/29/2013	1	0	1	0	0	0	0	2	436	320	1	0	0	761
8/5/2013	0	0	0	0	0	0	0	2	137	89	0	0	0	228
8/13/2013	2	0	0	0	0	0	0	1	145	73	0	0	0	221
8/19/2013	0	0	2	0	1	0	0	0	60	60	0	0	0	123
8/26/2013	1	0	7	0	0	3	0	37	254	27	2	0	0	331
9/2/2013	2	0	22	0	0	0	0	19	63	9	0	0	0	115
9/9/2013	36	0	60	0	0	0	0	29	98	13	3	0	0	239
9/16/2013	61	0	145	0	0	0	0	110	31	3	0	0	0	350
Totals	111	0	241	1	1	4	0	203	1986	927	8	0	0	3482
Percent	3.2%	0.0%	6.9%	0.0%	0.0%	0.1%	0.0%	5.8%	57.0%	26.6%	0.2%	0.0%	0.0%	100.0%

Table D-3. Adult mosquito trap data, Despain Farm site, 2014.

Date	Ae. vexans	Oc. campestris	Oc. dorsalis	Oc. increpitus	Oc. melanimon	Oc. nigromaculis	An. freeborni	Cx. erythrothorax	Cx. pipiens	Cx. tarsalis	Cs. inornata	Cs. incidens	Co. perturbans	TOTALS
27-May-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Jun-14	2	0	7	0	0	1	0	0	1	6	0	0	0	17
9-Jun-14	9	0	80	0	0	1	0	0	0	19	0	0	0	109
16-Jun-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Jun-14	2	0	12	0	0	0	0	0	7	19	0	0	0	40
30-Jun-14	0	0	11	0	0	0	0	0	12	27	0	0	0	50
7-Jul-14	0	0	5	0	0	0	0	0	39	38	0	0	0	82
14-Jul-14	0	0	6	0	0	0	0	0	70	42	0	0	0	118
21-Jul-14	2	0	2	0	0	2	0	1	116	27	0	0	0	150
28-Jul-14	1	0	4	0	0	0	0	1	72	28	0	0	0	106
4-Aug-14	2	0	12	0	0	1	0	7	163	14	0	0	0	199
11-Aug-14	0	0	28	0	0	0	0	3	45	7	0	0	0	83
18-Aug-14	3	0	8	0	0	0	0	0	53	6	0	0	0	70
25-Aug-14	12	0	12	0	0	0	0	26	33	10	0	0	0	93
1-Sep-14	1	0	26	0	0	0	0	6	20	5	0	0	0	58
8-Sep-14	1	0	5	0	0	0	0	0	6	1	0	0	0	13
15-Sep-14	0	0	8	0	0	0	0	12	10	2	0	0	0	32
Total by Species	35	0	226	0	0	5	0	56	647	251	0	0	0	1,220
% by Species	2.87%	0.00%	18.52%	0.00%	0.00%	0.41%	0.00%	4.59%	53.03%	20.57%	0.00%	0.00%	0.00%	100.00%

Table D-4. Adult mosquito trap data, Skipper Bay site, 2013.

Date	<i>Ae. vexans</i>	<i>Oc. campestris</i>	<i>Oc. dorsalis</i>	<i>Oc. increpitus</i>	<i>Oc. melanimon</i>	<i>Oc. nigromaculis</i>	<i>An. freeborni</i>	<i>Cx. erythrothorax</i>	<i>Cx. pipiens</i>	<i>Cx. tarsalis</i>	<i>Cs. inornata</i>	<i>Cs. Incdens</i>	<i>Co. perturbans</i>	TOTALS
20-May-13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-May-13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Jun-13	0	0	0	3	0	0	1	0	2	48	0	0	0	54
10-Jun-13	10	0	1	6	0	0	1	0	37	57	0	0	0	112
18-Jun-13	1	0	0	0	0	0	1	0	0	27	0	0	0	29
24-Jun-13	0	0	0	0	0	0	0	0	33	85	0	0	0	118
1-Jul-13	0	0	0	0	0	0	0	0	66	11	0	0	0	77
8-Jul-13	3	0	0	0	0	0	1	1	117	120	0	0	0	242
15-Jul-13	16	0	1	0	0	0	1	7	589	82	1	0	0	697
22-Jul-13	6	0	0	0	0	0	2	4	277	35	0	0	0	324
29-Jul-13	0	0	0	0	0	0	1	1	257	140	1	0	0	400
5-Aug-13	1	0	0	0	0	0	0	3	139	96	0	0	0	239
13-Aug-13	0	0	0	0	0	0	0	16	224	56	0	0	0	296
19-Aug-13	0	0	0	0	0	0	0	3	415	49	0	0	0	467
26-Aug-13	3	0	0	0	0	0	0	152	442	39	3	0	0	639
2-Sep-13	0	0	9	0	0	0	0	4	84	2	0	0	0	99
9-Sep-13	13	0	17	0	0	0	1	30	119	7	1	0	0	188
16-Sep-13	3	0	7	0	0	0	0	67	6	1	0	0	0	84
Totals	56	0	35	9	0	0	9	288	2,807	855	6	0	0	4,065
Percent	1.38%	0.00%	0.86%	0.22%	0.00%	0.00%	0.22%	7.08%	69.05%	21.03%	0.15%	0.00%	0.00%	100.00%

Table D-5. Adult mosquito trap data, Skipper Bay site, 2014.

Date	Ae. vexans	Oc. campestris	Oc. dorsalis	Oc. increpitus	Oc. melanimon	Oc. nigromaculis	An. freeborni	Cx. erythrothorax	Cx. pipiens	Cx. tarsalis	Cs. inornata	Cs. incidens	Co. perturbans	TOTALS
27-May-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Jun-14	0	0	3	4	0	5	1	0	1	23	1	0	0	38
9-Jun-14	4	0	24	7	0	0	0	0	3	3	0	0	0	41
16-Jun-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Jun-14	0	0	0	0	0	0	0	0	0	3	0	0	0	3
30-Jun-14	1	0	3	0	0	0	1	0	7	54	0	0	0	66
7-Jul-14	1	0	10	0	0	0	0	0	25	47	0	0	0	83
14-Jul-14	2	0	1	0	0	0	1	2	129	26	2	0	0	163
21-Jul-14	4	0	5	0	0	0	0	2	87	41	1	0	0	140
28-Jul-14	2	0	1	0	0	0	0	0	112	11	0	0	0	126
4-Aug-14	63	0	72	0	0	69	1	3	54	48	10	0	0	320
11-Aug-14	1	0	2	0	0	0	0	1	14	1	0	0	0	19
18-Aug-14	31	0	6	0	0	0	1	3	92	9	0	0	0	142
25-Aug-14	17	0	0	0	0	0	0	26	125	33	0	3	0	204
1-Sep-14	67	0	0	26	0	0	0	34	32	8	0	1	0	168
8-Sep-14	8	0	0	0	0	0	0	3	14	1	0	0	0	26
15-Sep-14	11	0	5	0	0	0	0	18	34	1	0	0	0	69
Total by Species	212	0	132	37	0	74	5	92	729	309	14	4	0	1,608
% by Species	13.18%	0.00%	8.21%	2.30%	0.00%	4.60%	0.31%	5.72%	45.34%	19.22%	0.87%	0.25%	0.00%	100.00%

PROVO RIVER DELTA RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix D: Functional Assessment Memo



BIO-WEST, Inc.

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MEMORANDUM

TO: Darren Olsen

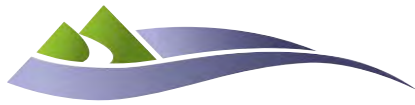
FROM: Robert Thomas

DATE: February 12, 2015

SUBJECT: Provo River Delta Restoration Wetland Functional Assessment

The following is a summary of the process undertaken to complete the wetlands functional assessment for the Provo River Delta Restoration project.

In 2010 BIO-WEST staff completed a delineation of wetlands located on accessible private properties within the project area. A large portion of the project area known as the Despain Property was not accessible at this time and was delineated in 2011. An assessment of the function of the delineated wetlands was required to determine the wetland restoration potential resulting from the project. Bob Thomas was given verbal approval by Mr. Tim Witman with the U.S. Army Corps of Engineers (USACE) on August 15, 2011 to use the Utah Department of Transportation (UDOT) Wetland Functional Assessment Method for this project. Input from the U.S. Fish and Wildlife Service and Utah Department of Natural Resources was required to complete the wildlife habitat portions of the assessment. A report summarizing the vegetation composition and general condition, including photographs of each wetland assessment area was provided to the agencies for their review. Because BIO-WEST did not have access to the Despain property this initial summary report includes a preliminary assessment of Despain property wetlands as observed from the adjacent properties. BIO-WEST received scoring input for the initial assessment from the agencies on November 17, 2011. In 2012 BIO-WEST was granted access to the Despain property and completed a delineation and assessment of the wetlands at that time. Following the Despain property delineation, a summary report detailing the Despain property wetlands was forwarded to agency personnel. The agency scoring responses regarding these wetlands was received on May 29, 2013. The scoring was then incorporated into the wetland assessment spreadsheet from the initial assessment to provide a complete record of existing wetland function on the project area. Following a site visit and subsequent input from the USACE, some of the Despain property wetland polygons were combined or otherwise slightly modified. The overall changes to wetland community types were minimal. The modified Despain wetland map was used in the scoring spreadsheet included with this memo.



An additional revision to the functional assessment was performed in February 2015. This revision was done because the post restoration emergent vegetation wetland communities were lumped into one type, “emergent wetlands”. This allowed for numerous wetland types exhibiting emergent wetland vegetation in the previous functional assessment results to be combined into one wetland type for the revised results. In addition the approximately 16.7 acre Provo City Wetland Mitigation Bank on the project area was delineated and approved by the USACE. This mapping revision is also reflected in the updated spreadsheet and the revised assessment map. These revisions had an effect on the results of the functional assessment. The revised spreadsheet is included in this memo.

The wetland functional assessment was performed using the methods described in the UDOT Wetland Functional Assessment Manual. BIO-WEST conducted field data collection for the functional assessment concurrently with the field delineation of wetlands within the project area. Vegetation, soils, and hydrology data were collected in association with wetland sampling points and supported by biologist’s observations within each delineated wetland. Each wetland was scored using the assessment method handbook matrix. The level of disturbance within the wetland was assessed relative to the level of disturbance immediately surrounding the wetland and within the wetland boundary. Types of disturbance include grazing, drainage ditches, mowing, crop cultivation, and construction of roads and buildings. The rating of disturbance increases both with the level of disturbance to the wetland itself and the level of disturbance within the surrounding area.

The plant community composition of each wetland was assessed via three categories: presence of expected layers of vegetation; percent of ground cover dominated by native vegetation; and the percent of native wetland plants to non-native or non-wetland plants. The wetlands were scored according to type, with the sum of each category resulting in a numerical score representative of the quality of the vegetation composition in the wetland.

Habitat for federal and state listed species was assessed following consultation with U.S. Fish and Wildlife Service and Utah Division of Wildlife Resources biologists. Agency biologists determine the listed species with documented occurrences or suspected occurrences within the project area. Additionally, the habitat within the project area was determined to be primary, secondary, or incidental habitat for each species. BIO-WEST biologists applied the agency input to each wetland within the project area. The combination of habitat use and species occurrence resulted in the functional score for this variable.

The quality of general wildlife habitat was assessed relative to the level of disturbance within the wetland and the plant community composition; the combined ratings provide the functional score. General fish and aquatic habitat was assessed by evaluating the level of cover and shading available as well as the permanence of the wetland. This variable was not applicable to the majority of the wetlands within the project area. The assessment of general amphibian habitat was dependent upon documented presence of amphibians within the project area. This information was provided from the agency consultation.

The hydrological and biophysical portion of the assessment included an evaluation of flood attenuation. This variable only applied to one wetland within the project area. A more typical assessment for this project was the short and long term surface water storage. Sediment, nutrient, and toxicant retention and removal was assessed by evaluating the percentage of ground with high to moderate surface roughness and any disturbance to the wetland's natural ability to store water compared to the surrounding land uses contribution of sedimentation, nutrients, or toxicants. Lastly, the assessment of sediment and shoreline stabilization was evaluated for ground surface roughness and the duration of surface water adjacent to rooted vegetation.

Each of these variables was given a score for its existing condition to provide a baseline functional assessment score for the project area in its current state. In order to determine the potential effect of the restoration project on the existing wetlands predictive models were developed for each project alternative. These models depict the type, extent, and size of wetlands created by the project alternatives. Assumptions associated with the project are that natural hydrology will be restored to the project area, that non-native and weedy vegetation will be reduced as a result of the project, and that wetlands unaffected by the project will remain in their existing condition. Each wetland type under each project alternative was scored for its expected post restoration condition.

The total number of points given for each assessment variable for an evaluated wetland were summed and divided by the total number of possible points. Variables that were not applicable to the wetland evaluated were omitted from the actual total and the total possible points. The result was a functional percentage. This percentage represents the complete functionality or the amount of functional loss for each wetland. A wetland with a functional percentage of 65 has lost 35% of its functionality, representing a system that has been negatively impacted through some type of disturbance. Conversely, a wetland with a functional score of 95% is relatively undisturbed and retains a high level of ecological functionality.

The difference in the total existing condition score and the post restoration score for each alternative provides the functional change in the project area wetlands under each alternative. The results of the functional assessment show a lift, or net improvement, in the functionality of the project area wetlands.

The results of the functional assessment are detailed in the attached functional assessment spreadsheet. The scoring of the wetlands in their current condition showed a decreased function for the majority of wetlands. This decreased function is indicative of wetlands that have been historically altered due to agricultural and other anthropomorphic changes. Each alternative was evaluated for its projected effect on project wetlands. The post restoration wetland scores reflect higher functionality over existing conditions. The difference in the functional scores shows an overall functional lift in the project area wetland system.

Attached are the following:

The functional assessment scoring sheet (updated February 12, 2015);
October 28, 2011 Summary Report Including Wetland Maps for Agencies;



BIO-WEST, Inc.

February 12, 2015

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March 13, 2013 Despain Property Summary Report Including Wetland Map for Agencies;
Revised Despain Property Functional Assessment Map (matches the functional assessment
scoring sheet below).

PROVO RIVER DELTA RESTORATION FUNCTIONAL ASSESSMENT RESULTS - EXISTING CONDITIONS

Wetland/Site Number	Wetland Size (Acres)	Assessment Area (Acres)	Wetland Classification		Overall Functional Assessment Category*	BIOLOGICAL ASSESSMENT							HYDROLOGICAL/BIOPHYSICAL ASSESSMENT				FUNCTIONAL ASSESSMENT RATING (ORIGINAL)			
						15a. Level of Disturbance	15b. Plant Community Composition	15c. Threatened or Endangered Species	15d. UT Natural Heritage Program *	15e. General Wildlife Habitat	15f. General Fish/Aquatic Habitat	15g. General Amphibian Habitat (Yes/No)*	15h. Flood Attenuation	15i. Short/Long Term Surface Water Storage	15j. Sed./Nut./Tox. Retention & Removal	15k. Sediment/Shoreline Stabilization	ACTUAL FUNCTIONAL POINTS/RATING	POSSIBLE FUNCTIONAL POINTS	FUNCTIONAL UNIT (Actual Points X AA Acreage)	PERCENT (%) TOTAL FUNCTIONAL POINTS
A1	38.2	38.2	Lacustrine Fringe	3	3	H	0.1	0.8	0.7	0.2	0.3	0.2	N/A	1.0	0.6	1.0	4.9	8.0	187.2	61%
B1	1.1	1.1	Depressional	1	3	H	0.2	0	0.7	0.2	N/A	0.2	N/A	0.8	0.9	N/A	3.0	6.0	3.3	50%
C1	4.5	4.5	Depressional	1	3	H	1.0	0.0	0.1	0.6	N/A	0.2	N/A	0.4	0.9	N/A	3.2	6.0	14.4	53%
E1	2.6	2.6	Depressional	3	2	H	1.0	0.0	0.7	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.2	6.0	10.9	70%
F1	2.6	2.6	Slope	1	3	H	0.2	0.3	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	2.9	6.0	7.5	48%
F2	20.9	20.9	Slope	1	3	H	0.2	0.9	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	3.5	6.0	73.2	58%
F3	1.1	1.1	Raised Peat Mounds	2	3	H	1.0	0.0	0.7	0.6	N/A	0.2	N/A	0.4	0.9	N/A	3.8	6.0	4.2	63%
F4	4.1	4.1	Slope	1	2	H	1.0	0.7	0.7	0.6	N/A	0.2	N/A	0.4	0.9	N/A	4.5	6.0	18.5	75%
F5	1.1	1.1	Slope	1	3	H	0.2	0.0	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	2.6	6.0	2.9	43%
F6	13.6	13.6	Slope	1	3	H	0.4	0.9	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	3.7	6.0	50.3	62%
F7	1.5	1.5	Riverine	2	3	H	0.5	0.3	0.7	0.2	0.3	0.2	0.4	N/A	0.3	0.3	3.2	8.0	4.8	40%
F8	2.4	2.4	Slope	1	3	H	0.2	0.7	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	3.3	6.0	7.9	55%
H1	4.0	4.0	Slope	1	3	H	0.2	0.0	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	2.6	6.0	10.3	43%
I1	73.5	73.5	Depressional	0	1	H	1.0	0.9	0.8	0.6	N/A	0.2	N/A	0.8	0.9	N/A	5.2	6.0	382.2	87%
I2	41.3	41.3	Depressional	0	2	H	0.2	0.9	0.6	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.2	6.0	173.5	70%
I3	14.8	14.8	Depressional	0	3	H	0.6	0.9	0.1	0.2	N/A	0.0	N/A	0.8	0.9	N/A	3.5	6.0	51.8	58%
I4	28.1	28.1	Depressional	0	3	H	0.6	0.9	0.1	0.2	N/A	0.0	N/A	0.8	0.9	N/A	3.5	6.0	98.4	58%
I5	2.3	2.3	Depressional	0	3	H	0.4	0.0	0.8	0.2	N/A	0.2	N/A	0.6	0.7	N/A	2.9	6.0	6.7	48%
I6	1.2	1.2	Raised Peat Mounds	0	3	H	0.2	0.9	0.0	0.2	N/A	0.0	N/A	0.8	0.9	N/A	3.0	6.0	3.6	50%
I7	1.0	1.0	Depressional	0	3	H	0.6	0.9	0.1	0.2	N/A	0.0	N/A	0.8	0.9	N/A	3.5	6.0	3.5	58%
I8	0.9	0.9	Raised Peat Mounds	1	3	H	0.2	0.9	0.1	0.2	N/A	0.2	N/A	0.8	0.9	N/A	3.3	6.0	3.0	55%
I9	5.6	5.6	Depressional	0	3	H	0.6	0.0	0.6	0.6	N/A	0.2	N/A	0.8	0.9	N/A	3.7	6.0	20.7	62%
I10	1.2	1.2	Raised Peat Mounds	1	1	H	1.0	0.9	0.6	0.6	N/A	0.2	N/A	0.8	0.9	N/A	5.0	6.0	6.0	83%
I11	2.4	2.4	Depressional	1	2	H	1.0	0.9	0.1	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.5	6.0	10.8	75%
I12	0.2	0.2	Depressional	0	3	H	0.2	0.9	0.1	0.2	N/A	0.2	N/A	0.8	0.9	N/A	3.3	6.0	0.7	55%
I13	0.1	0.1	Depressional	2	3	H	0.4	0.0	0.2	0.2	N/A	0.2	N/A	0.8	0.9	N/A	2.7	6.0	0.3	45%
M1	0.6	0.6	Depressional	1	3	L	0.8	0.0	0.0	1.0	N/A	0.2	N/A	1.0	0.9	N/A	3.9	6.0	2.3	65%
M2	7.0	7.0	Raised Peat Mounds	2	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	41.3	98%
M3	7.3	7.3	Depressional	2	1	L	1.0	0.0	0.8	1.0	N/A	0.2	N/A	1.0	0.9	N/A	4.9	6.0	35.8	82%
TOTAL EXISTING FUNCTIONAL UNITS																		1235.7		

POST RESTORATION - Alternative A																				
	2.4	2.4	Riverine	2	1	L	0.9	0.9	0.9	1.0	0.6	0.2	0.8	N/A	0.9	0.8	7.0	8.0	16.8	88%
	404.4	404.4	Emergent Wetland (Lacustrine Fringe)	2	1	L	1.0	0.7	0.6	1.0	0.7	0.2	N/A	1.0	0.6	1.0	6.8	8.0	2749.9	85%
	4.2	4.2	Forested Wetland	1	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	24.8	98%
	11.4	11.4	Raised Peat Mounds	2	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	67.3	98%
	35.7	35.7	Lacustrine Vegetated Aquatic Bed	3	1	L	1.0	0.7	0.6	1.0	0.7	0.2	N/A	1.0	0.6	1.0	6.8	8.0	242.8	85%
	2.6	2.6	Depressional	3	2	H	1.0	0.0	0.7	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.2	6.0	10.9	70%
TOTAL POST RESTORATION FUNCTIONAL UNITS																			3112.4	

TOTAL NET GAIN OF FUNCTIONAL UNITS, POST RESTORATION UNITS (3112.4) - EXISTING UNITS (1235.7) = 1876.7

POST RESTORATION - Alternative B																				
	0.2	0.2	Riverine	2	1	L	0.9	0.9	0.9	1.0	0.6	0.2	0.8	N/A	0.9	0.8	7.0	8.0	1.4	88%
	258.3	258.3	Emergent Marsh (Lacustrine Fringe)	2	1	L	1.0	0.7	0.6	1.0	0.7	0.2	N/A	1.0	0.6	1.0	6.8	8.0	1756.4	85%
	1.1	1.1	Depressional	1	3	H	0.2	0	0.7	0.2	N/A	0.2	N/A	0.8	0.9	N/A	3.0	6.0	3.3	50%
	4.5	4.5	Depressional	1	3	H	1.0	0.0	0.1	0.6	N/A	0.2	N/A	0.4	0.9	N/A	3.2	6.0	14.4	53%
	4.2	4.2	Forested Wetland	1	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	24.8	98%
	11.4	11.4	Raised Peat Mounds	2	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	67.3	98%
	28.9	28.9	Lacustrine Vegetated Aquatic Bed	3	1	L	1.0	0.7	0.6	1.0	0.7	0.2	N/A	1.0	0.6	1.0	6.8	8.0	196.5	85%
	2.6	2.6	Depressional	3	2	H	1.0	0.0	0.7	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.2	6.0	10.9	70%
TOTAL POST RESTORATION FUNCTIONAL UNITS																			2075.0	

TOTAL NET GAIN OF FUNCTIONAL UNITS, POST RESTORATION UNITS (2075) - EXISTING UNITS (1235.7) = 839.3

POST RESTORATION - Alternative C																			
0.7	0.7	Depressional	1	3	L	0.8	0.0	0.0	1.0	N/A	0.2	N/A	1.0	0.9	N/A	3.9	6.0	2.7	65%
7.0	7.0	Raised Peat Mounds	2	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	41.3	98%
7.3	7.3	Depressional	2	1	L	1.0	0.0	0.8	1.0	N/A	0.2	N/A	1.0	0.9	N/A	4.9	6.0	35.8	82%
2.6	2.6	Depressional	3	2	H	1.0	0.0	0.7	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.2	6.0	10.9	70%
2.6	2.6	Slope	1	3	H	0.2	0.3	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	2.9	6.0	7.5	48%
20.9	20.9	Slope	1	3	H	0.2	0.9	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	3.5	6.0	73.2	58%
1.1	1.1	Raised Peat Mounds	2	3	H	1.0	0.0	0.7	0.6	N/A	0.2	N/A	0.4	0.9	N/A	3.8	6.0	4.2	63%
2.3	2.3	Depressional	0	3	H	0.4	0.0	0.8	0.2	N/A	0.2	N/A	0.6	0.7	N/A	2.9	6.0	6.7	48%
4.1	4.1	Slope	1	2	H	1.0	0.7	0.7	0.6	N/A	0.2	N/A	0.4	0.9	N/A	4.5	6.0	18.5	75%
1.1	1.1	Slope	1	3	H	0.2	0.0	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	2.6	6.0	2.9	43%
13.6	13.6	Slope	1	3	H	0.4	0.9	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	3.7	6.0	50.3	62%
1.5	1.5	Riverine	2	3	H	0.5	0.3	0.7	0.2	0.3	0.2	0.4	N/A	0.3	0.3	3.2	8.0	4.8	40%
2.4	2.4	Slope	1	3	H	0.2	0.7	0.7	0.2	N/A	0.2	N/A	0.4	0.9	N/A	3.3	6.0	7.9	55%
1.2	1.2	Raised Peat Mounds	0	3	H	0.2	0.9	0.0	0.2	N/A	0.0	N/A	0.8	0.9	N/A	3.0	6.0	3.6	50%
1.2	1.2	Raised Peat Mounds	1	1	H	1.0	0.9	0.6	0.6	N/A	0.2	N/A	0.8	0.9	N/A	5.0	6.0	6.0	83%
2.4	2.4	Depressional	1	2	H	1.0	0.9	0.1	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.5	6.0	10.8	75%
70.5	70.5	Emergent Marsh not restored	0	1	H	1.0	0.9	0.8	0.6	N/A	0.2	N/A	0.8	0.9	N/A	5.2	6.0	366.6	87%
49.0	49.0	Wet Meadow not restored	0	2	H	0.2	0.9	0.6	0.6	N/A	0.2	N/A	0.8	0.9	N/A	4.2	6.0	205.8	70%
0.2	0.2	Depressional	0	3	H	0.2	0.9	0.1	0.2	N/A	0.2	N/A	0.8	0.9	N/A	3.3	6.0	0.7	55%
1.1	1.1	Riverine	1	1	L	0.9	0.9	0.9	1.0	0.6	0.2	0.8	N/A	0.9	0.8	7.0	8.0	7.7	88%
214.9	214.9	Emergent Marsh (Lacustrine Fringe)	2	1	M	1.0	0.7	0.6	1.0	0.7	0.2	N/A	1.0	0.6	1.0	6.8	8.0	1461.3	85%
0.6	0.6	Forested Wetland	1	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	3.5	98%
22.2	22.2	Lacustrine Vegetated Aquatic Bed	3	1	L	1.0	0.7	0.6	1.0	0.7	0.2	N/A	1.0	0.6	1.0	6.8	8.0	151.0	85%
0.9	0.9	Raised Peat Mounds	2	1	L	1.0	0.9	0.9	1.0	N/A	0.2	N/A	1.0	0.9	N/A	5.9	6.0	5.3	98%
TOTAL POST RESTORATION FUNCTIONAL UNITS																	2488.9		
TOTAL NET GAIN OF FUNCTIONAL UNITS, POST RESTORATION UNITS (2488.9) - EXISTING UNITS (1235.7) =1253.2																			

Proposed Provo River Delta Restoration Project

Utah County, Utah

**Draft Summary for Agency Review and Scoring using the
Utah Department of Transportation, Wetland Functional Assessment Method**

October 28, 2011

Personnel: Bob Thomas (Wetland Scientist, BIO-WEST, Inc.)
Travis Taylor (Vegetation Technician, BIO-WEST, Inc.)
Steve Ripple (Botanist, Independent Contractor)
John Rice (Wetland Scientist, Utah Mitigation Commission)

Field Work Performed: September and October, 2011

Summary Prepared by BIO-WEST, Inc.

Introduction

The Utah Reclamation Mitigation and Conservation Commission (URMCC) is proposing to restore approximately 734-acres of the historic Provo River Delta at Utah Lake in Utah County, Utah. The project area has been heavily altered through the construction of the Utah Lake levee, the installation of a large scale drainage system behind the levee, the channelization of the Provo River, and intensive agricultural activities. The project would involve restoring the natural meandering Provo River channel through the historic river delta (project area), and removal of the existing flood control levee on the Utah Lake shoreline. The completed project would allow the restored river and Utah Lake to resume the natural flood cycles within the project area. The purpose of the project is the restoration of critical habitat for the federally endangered June Sucker (*Chasmistes liorus*).

Despite the existing alterations, the project area contains extensive existing wetlands that are supported by a high groundwater table and slope drainage. These altered wetlands continue to provide a measurable amount of ecological function to the existing ecosystem. The U.S. Army Corps of Engineers (USACE) has requested that the URMCC evaluate and quantify the ecological function provided by the project area wetlands as they currently exist. The existing ecological functions can then be compared to the post-project level of the restored ecological functions, allowing for an estimate of the expected change.

The Utah Department of Transportation (UDOT) developed a Wetland Functional Assessment Method and published a handbook of the method for public use in April 2006. The UDOT assessment is commonly used in Utah and has been approved by the USACE regional office in Bountiful, Utah. BIO-WEST, Inc. on behalf of the URMCC has delineated the project area wetlands and gathered the necessary field data to perform a wetland functional assessment of the project area using the UDOT method. In addition to the field data that has been gathered, the UDOT manual requires site specific input from the U.S. Fish and Wildlife Service and the Utah Department of Wildlife Resources for completion of the functional assessment. This summary is intended to provide these agencies with the information required to complete applicable sections of the project area functional assessment.

The information provided within this summary includes;

- a photograph and brief description of each assessed wetland within the project area,
- a location map of the assessed wetlands,
- selected pages from the UDOT assessment handbook for use in agency responses to questions 12, 15c, 15d, and 15g.
- a spreadsheet summary of the assessed wetland scoring with the agency required response columns highlighted.

October 27, 2011

Wetland A1.

Wetland Size: 38.2 acres

Wetland Classification: Lacustrine Fringe



Summary: Wetland A1 is a lacustrine fringe wetland located below the ordinary high water mark along the eastern shore of Utah Lake. This wetland is adjacent to the Utah lake levee and a state park campground. The vegetation is dominated by a monoculture of common reed (*Phragmites australis*). The disturbance level is high due to the adjacent campground and levee. The wetland is permanently flooded. Wetland A1 was likely open water or a rooted aquatic lacustrine fringe wetland prior to construction of the Utah Lake levee. Wetland A1 did not appear to contain suitable habitat for Ute lady's tresses.

October 27, 2011

Wetland B1.

Wetland Size: 1.1 acres

Wetland Classification: Depressional



Summary: Wetland B1 is a drainage ditch containing open water and emergent wetland vegetation. The wetland is dominated by mixture of native and non-native species including reed canary grass (*Phalaris arundinaceae*), narrowleaf willow (*Salix exigua*), Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), crack willow (*Salix fragilis*), annual ragweed (*Ambrosia artemisiifolia*), hardstem bulrush (*Schoenoplectus acutus*), cattail (*Typha latifolia*), mountain rush (*Juncus arcticus*), and annual rabbitsfoot grass (*Polypogon monspeliensis*). The disturbance level is high due to heavy grazing and drainage of the ditch to an automated pumping system. The soils are mineral and hydrology is permanent freshwater. Wetland B1 was likely a marshy emergent lacustrine fringe wetland or rooted aquatic bed prior to construction of the Utah Lake levee. Wetland B1 did not appear to contain suitable habitat for Ute lady's tresses.

October 27, 2011

Wetland C1.

Wetland Size: 4.5 acres

Wetland Classification: Depressional



Summary: Wetland C1 is a saline emergent depression wetland dominated by salt grass (*Distichlis spicata*), red swampfire (*Salicornia rubra*), fivehorn smotherweed (*Bassia hyssopifolia*), and marshland goosefoot (*Chenopodium rubrum*). The disturbance level of the wetland is high due to heavy grazing, an adjacent drainage ditch, and a drainage ditch that bisects the wetland and effectively prevents inundation. The soils are mineral and hydrology is seasonal ephemeral. The dominant vegetation suggests highly saline conditions within the wetland. Wetland C1 was likely a marshy emergent lacustrine fringe wetland prior to construction of the Utah Lake levee. Wetland C1 did not appear to contain suitable habitat for Ute lady's tresses.

Wetland E1.

Wetland Size: 2.6 acres

Wetland Classification: Depressional



Summary: Wetland E1 is a depressional oxbow wetland that has been cut off from the Provo River. The wetland contains elements of open water, rooted aquatics, shrub/scrub, and emergent areas. The dominant vegetation includes reed canary grass, narrowleaf willow, Russian olive, Siberian elm, and crack willow. Soils are organic silt and hydrology is permanent surface water. The disturbance level is high due to the presence of a paved recreational trail around the entire wetland. The wetland has been separated from Provo River flooding and anaerobic conditions are typical in the open water areas of the wetland. Wetland E1 did not appear to contain suitable habitat for Ute lady's tresses.

October 27, 2011

Wetland F1.

Wetland Size: 2.6 acres

Wetland Classification: Slope



Summary: Wetland F1 is an emergent wetland dominated by introduced forage species such as strawberry clover (*Trifolium fragiferum*), red clover (*Trifolium pratense*), annual bluegrass (*Poa annua*), and a combination of native and introduced species including bushy knotweed (*Polygonum ramosissimum*), redtop (*Agrostis gigantea*), quack grass (*Elymus repens*), and various wheat grasses. Wetland species such as hardstem bulrush, wooly sedge (*Carex lasiocarpa*), Nebraska sedge (*Carex nebrascensis*), mountain rush, and common spikerush (*Eleocharis palustris*) are less predominate but present in small depressions throughout the sloping terrain. The disturbance level is high due to heavy grazing and alterations to the natural wetland hydrology including ditches and a drainage pumping station. The soils are organic and hydrology is seasonal freshwater. This wetland is near known habitat (wetlands F2 and F6) for Ute lady's tresses (*Spiranthes diluvialis*), however; two years of surveys were performed and the plant was not observed within wetland F1.

October 27, 2011

Wetland F2.

Wetland Size: 20.9 acres

Wetland Classification: Slope



Summary: Wetland F2 is an emergent wetland with a mix of native and non-native species, dominated by annual ragweed, Joe-pye weed (*Eupatorium maculatum*), hardstem bulrush, meadow fescue (*Schedonorus pratensis*), Nuttall's sunflower (*Helianthus Nuttallii*), common three square (*Schoenoplectus pungens*), field mint (*Mentha arvensis*), spearmint (*Mentha spicata*), lady's thumb (*Polygonum persicaria*), water knotweed (*Polygonum amphibium*), redtop, and quack grass. The disturbance level is high due to heavy grazing, several drainage ditches, and other structures. The soils are organic and hydrology is seasonal freshwater. A documented Ute lady's tresses population occurs in this assessment area.

October 27, 2011

Wetland F3.

Wetland Size: 1.1 acres

Wetland Classification: Slope (Raised Fen)



Summary: Wetland F3 is a raised fen surrounded by weedy uplands and emergent wet meadow areas. Wetland F3 contains mostly native vegetation including stinging nettle (*Urtica dioica*), western aster (*Symphyotrichum ascendens*), western goldenrod (*Solidago occidentalis*), common three square, mountain rush, common spikerush, swamp verbena (*Verbena hastata*), seaside arrowgrass (*Triglochin maritima*), rough bugleweed (*Lycopus asper*), and annual ragweed on the fringes. The disturbance level is characterized as high due to heavy grazing and nearby drainage ditches. The soils are organic and hydrology is persistent freshwater. This wetland is near known habitat (wetlands F2 and F6) for Ute lady's tresses, however; two years of surveys have been performed and the plant was not observed within wetland F3.

October 27, 2011

Wetland F4.

Wetland Size: 4.1 acres

Wetland Classification: Slope



Summary: Wetland F4 is a grazed emergent wetland. The dominant vegetation consists of native species including common three square, common spikerush, mountain rush, wooly sedge, Nebraska sedge, meadow hawksbeard (*Crepis runcinata*), swamp pricklegrass (*Crypsis schoenoides*), and scratchgrass (*Muhlenbergia asperifolia*). The upland grass squirreltail (*Elymus elymoides*) is also present and was probably planted in the meadow as a forage species or is propagating from bordering areas. The disturbance level is high due to heavy grazing and adjacent drainage ditches. Soils are organic and hydrology is seasonal and persistent freshwater. This wetland is near known habitat (wetlands F2 and F6) for Ute lady's tresses, however; two years of surveys have been performed and the plant was not observed within wetland F4.

Wetland F5.

Wetland Size: 1.1 acres

Wetland Classification: Slope



Summary: Wetland F5 is a disturbed pasture with saturated soils. The wetland is dominated by non-native and native vegetation including annual bluegrass, bushy knotweed, annual ragweed, spiny cocklebur (*Xanthium spinosum*), marshland goosefoot, and hardstem bulrush. The disturbance level is high due to heavy grazing, drainage ditches, and structures. The soils are organic and hydrology is seasonal freshwater. This wetland is near known habitat (wetlands F2 and F6) for Ute lady's tresses, however; two years of surveys have been performed and the plant was not observed within wetland F5.

Wetland F6.

Wetland Size: 13.6 acres

Wetland Classification: Slope



Summary: Wetland F6 is a disturbed emergent wetland. The wetland is dominated by a mix of native and non-native vegetation including common three square, mountain rush, Nuttall's sunflower, Joe-pye weed, common spikerush, and western aster. The disturbance level is considered high due to heavy grazing and an adjacent drainage ditch that hinders inundation. The soils are organic and hydrology is seasonal freshwater. A documented Ute lady's tresses population occurs in wetland F6 and a single plant was observed during the wetland assessment.

October 27, 2011

Wetland F7.

Wetland Size: 1.5 acres

Wetland Classification: Riverine



Summary: Wetland F7 is a riverine wetland with a small stream discharging from an upslope culvert into the project area. The banks of the water course and the floodplain bench are characterized by a combination of native and non-native wetland and aquatic plants including common spikerush, common three square, reed canary grass, watercress (*Nasturtium officinale*), annual rabbitsfoot grass, common reed, and Russian olive. The disturbance level is high due to heavy grazing, several culvert stream crossings, a straightened stream channel, fill material within the natural floodplain bench, and the stream outflow into a drainage canal. The soils are organic and hydrology is permanent freshwater. Wetland F7 lacks a native riparian shrub community and a natural floodplain bench. This wetland is near known habitat (wetlands F2 and F6) for Ute lady's tresses, however; two years of surveys have been performed and the plant was not observed within wetland F7.

October 27, 2011

Wetland F8.

Wetland Size: 2.4 acres

Wetland Classification: Slope



Summary: Wetland F8 is an emergent grazed pasture bordering the floodplain bench of wetland F7. The wetland is dominated by a mixture of native and non-native vegetation including intermediate wheatgrass (*Thynopyrum intermedium*), annual bluegrass, reed canary grass, and Nuttall's sunflower. The northern margins of the wetland contain annual ragweed and Russian olive. The disturbance level is high because of heavy grazing and a large adjacent drainage canal. The soils are organic and hydrology is seasonal freshwater. This wetland is near known habitat (wetlands F2 and F6) for Ute lady's tresses, however; two years of surveys have been performed and the plant was not observed within wetland F8.

October 27, 2011

Wetland H1.

Wetland Size: 1.9 acres

Wetland Classification: Slope



Summary: Wetland H1 is a weedy agricultural field supporting wetland vegetation in a depression. The vegetation is characterized by a mix of non-native and native weedy species such as prickly Russian thistle (*Salsola tragus*), lambsquarters (*Chenopodium album*), lady's thumb, annual blue grass, and reed canary grass. The wetland is surrounded by upland weedy vegetation. The disturbance level is high due to agricultural cultivation and grazing, fill material, the adjacent paved highway, and an adjacent ditch. The soils are mineral and hydrology is seasonal freshwater. Wetland H1 did not appear to contain suitable habitat for Ute lady's tresses.

October 27, 2011

Wetland I1.

Wetland Size: 135.8 acres

Wetland Classification: Depressional



Summary: Wetland I1 is an emergent wet meadow and emergent marsh complex. The vegetation is dominated by a mixture of native and non-native plants including reed canary grass, mountain rush, common three square, water sedge (*Carex aquatilis*), Nebraska sedge, saltgrass, cattail (*typha latifolia*), strawberry clover, spiny cocklebur, and curly dock (*Rumex crispus*). The disturbance level is high due to heavy grazing and a drainage ditch surrounding the wetland. The soils are organic and hydrology is seasonal freshwater and permanent freshwater. A known Ute lady's tresses population has been documented within wetland I1 but the exact location is unknown. A Provo City wetland mitigation area is located within wetland I1, however; this mitigation area was not assessed due to a lack of site access. The mitigation area is fenced off to prevent grazing. Wetland I1 was likely emergent and rooted aquatic lacustrine fringe wetland prior to construction of the Utah Lake levee.

October 27, 2011

Wetland I2.

Wetland Size: 65.3 acres

Wetland Classification: Depressional



Summary: Wetland I2 is a grazed pasture with some wet meadow characteristics transitioning to upland areas. The vegetation is dominated by a mixture of native and non-native species including salt grass, intermediate wheatgrass, strawberry clover, red top, and mountain rush. The disturbance level is high due to heavy grazing and drainage ditches surrounding the wetland. The soils are organic and hydrology is ephemeral and seasonal. Wetland I2 was likely emergent and rooted aquatic lacustrine fringe wetland prior to construction of the Utah Lake levee. Wetland I2 did not appear to contain suitable habitat for Ute lady's tresses.

U T A H L A K E

Wetland mitigation area
not assessed

Detail

I2
65.3 ac

I1
135.8 ac

A1
38.2 ac

B1
1.1 ac

C1
4.5 ac

H1
1.9 ac

E1
2.6 ac

D1
0.3 ac

G1
0.1 ac

F1

F2

F3

F4

F5

F6

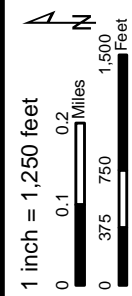
F7

F8

Spring

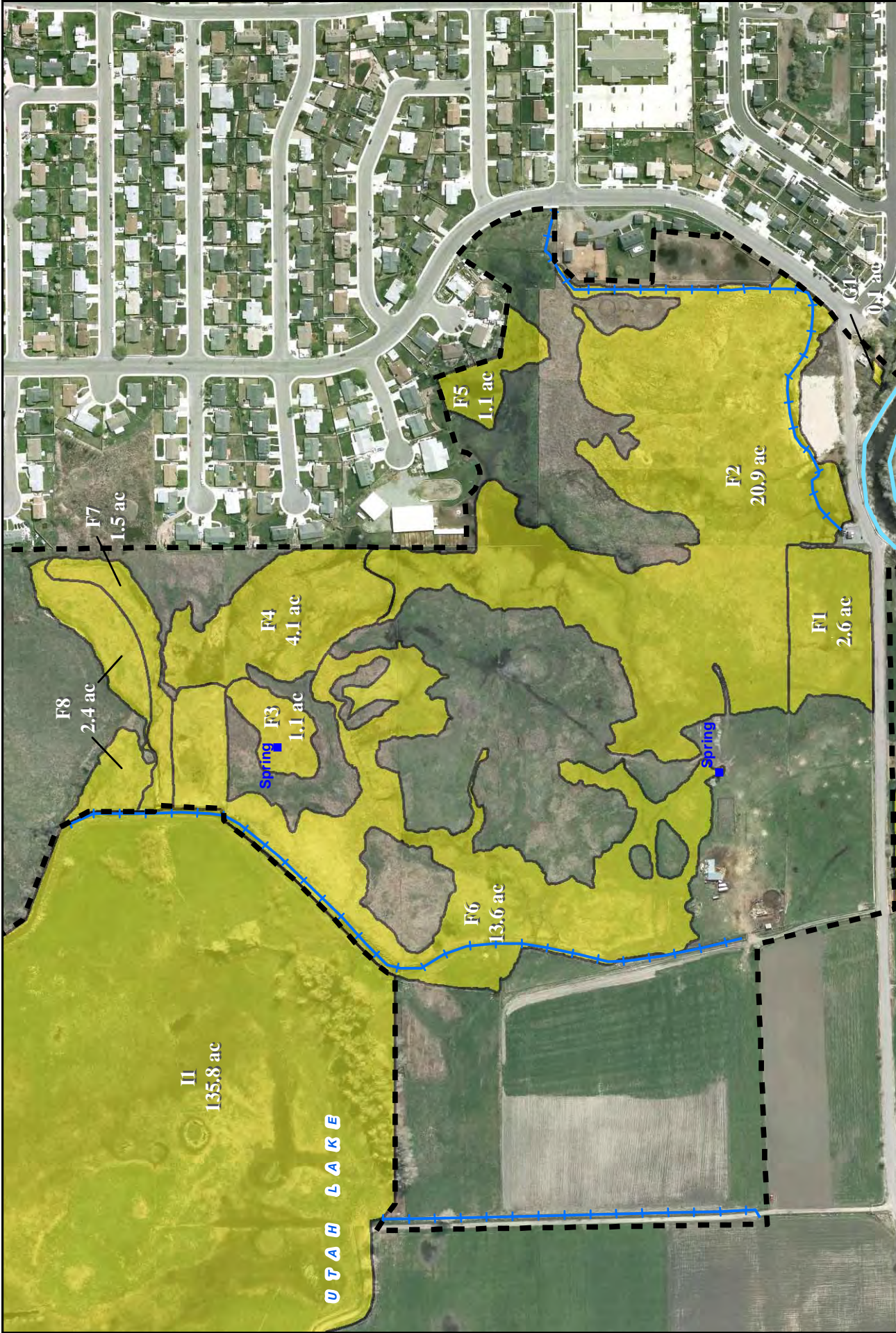
Draft Wetland Functional Assessment Map

Basemap: 2009 HRO 1' Color
Orthophotography, Utah AGRC
Projection: State Plane, Utah Central,
FIPS 4302
Map dated Oct 25, 2011



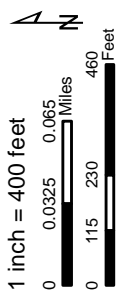
- Project Boundary
- Ordinary High Water Mark
- Irrigation Canals
- Spring
- Wetlands





Draft Wetland Functional Assessment Map Detail

Basemap: 2009 HRO 1' Color
 Orthophotography, Utah AGRC
 Projection: State Plane, Utah Central,
 FIPS 4302
 Map dated Oct 25, 2011



- Project Boundary
- Ordinary High Water Mark
- Irrigation Canals
- Spring
- Wetlands



Proposed Provo River Delta Restoration Project

Utah County, Utah

Summary for Agency Review and Scoring Using the Utah Department of Transportation Wetland Functional Assessment Method

March 12, 2013

Personnel: Bob Thomas (Wetland Scientist, BIO-WEST, Inc.)
Kari Coy (Botany Technician, BIO-WEST, Inc.)

Fieldwork Performed: August 22 and 23, 2012

Summary Prepared by BIO-WEST, Inc.

Introduction

The Utah Reclamation Mitigation and Conservation Commission (URMCC) is proposing to restore the historic Provo River Delta at Utah Lake (project area) in Utah County, Utah. The project area has been altered through the construction of the Utah Lake levee, installation of a large-scale drainage system behind the levee, channelization of the Provo River, and intensive agricultural activities including grazing. The project would involve restoring the natural meandering Provo River channel through the historic river delta and removing the existing flood control levee on the Utah Lake shoreline. The completed project would allow the restored river and Utah Lake to resume natural flood cycles within the project area. The purpose of the project is to restore critical habitat for the federally endangered June sucker (*Chasmistes liorus*).

Despite existing alterations, the project area contains wetlands that are supported by a high groundwater table and slope drainage. These altered wetlands continue to provide a measurable amount of ecological function to the existing ecosystem. The U.S. Army Corps of Engineers (USACE) requested that the URMCC evaluate and quantify the ecological function provided by project area wetlands as they currently exist. The existing ecological functions can then be compared with the post-project level of the restored ecological functions, to quantify the expected change.

The Utah Department of Transportation (UDOT) developed a Wetland Functional Assessment Method and published a handbook of the method for public use in April 2006. The UDOT assessment is commonly used in Utah and has been approved by the USACE regional office in Bountiful, Utah. BIO-WEST, Inc., on behalf of the URMCC, delineated the project area wetlands and gathered the necessary field data to perform a wetland functional assessment of the project area using the UDOT method. In addition to the field data that was gathered, the UDOT manual requires site-specific input from the U.S. Fish and Wildlife Service (USFWS) and Utah Department of Wildlife Resources (UDWR) for completion of the functional assessment. This summary is intended to provide these agencies with the information required to complete applicable sections of the project area functional assessment.

Approximately 248 acres of the project area were evaluated in 2011. This evaluation included consultation with USFWS and UDWR. At the time of the 2011 evaluation BIO-WEST personnel were not allowed access to approximately 265 acres of the project area known as the Despain parcel. Evaluation of the Despain parcel was completed by observing conditions in the parcel from adjacent lands. The 2011 summary report to the agencies described 201 acres of wetlands within the Despain parcel and identified those wetlands as I1 and I2. In August 2012 BIO-WEST was allowed access to the Despain parcel for the purposes of delineating and performing a functional assessment of those wetlands. As a result of the 2012 site visit, it was determined that the Despain parcel contains 181.2 acres of wetlands that were divided into 21 separate areas for the functional assessment evaluation. The evaluation did not include 7.9 acres of excavated drainage ditches on the Despain parcel. This summary report describes the Despain parcel wetlands.

March 12, 2013

The information provided in this summary includes:

- a photograph (when available) and brief description of each assessed wetland area;
- a location map of the assessed wetlands;
- selected pages from the UDOT assessment handbook for use in agency responses to questions 12, 15c, 15d, and 15g;
- a spreadsheet summary of the assessed wetland scoring with the agency-required response columns highlighted.

Should you have questions about this summary or require additional information, please contact Mr. Mark Holden of the URMCC.

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Wetland I1.

Wetland Size: 32.3 acres

Wetland Classification: Depressional



Summary: Wetland I1 is a depressional wetland disconnected from Utah Lake by the Utah lake levee. The vegetation is dominated by chairmaker's bulrush (*Schenoplectus americanus*), common spikerush, (*Eleocharis palustris*), and spotted ladysthumb (*Polygonum persicaria*). The disturbance level is high due to frequent grazing activity and hydrologic alterations. The wetland is semi-permanently flooded. The hydrology of the wetland is controlled via a system of irrigation canals and, during high water years, the wetland is drained by pumping excess water into Utah Lake. Wetland I1 was likely a marshy lacustrine fringe wetland prior to construction of the Utah Lake levee. Wetland I1 did not appear to contain suitable habitat for Ute lady's tresses (*Spiranthes diluvialis*).

Wetland I2.

Wetland Size: 24.7 acres

Wetland Classification: Depressional



Summary: Wetland I2 is a depressional wetland disconnected from Utah Lake by the Utah lake levee. Wetland I2 is separated from Wetland I1 by a drainage ditch. The vegetation is dominated by chairmaker's bulrush, water sedge (*Carex aquatilis*), and saltgrass (*Distichlis spicata*). Other species found in the wetland include lambsquarters (*Chenopodium album*) and scratchgrass (*Muhlenbergia asperifolia*). The disturbance level is high due to frequent grazing activity and hydrologic alterations. The hydrology of the wetland is controlled via a system of irrigation canals and, during high water years, the wetland is drained by pumping excess water into Utah Lake. Wetland I2 was likely a marshy lacustrine fringe wetland prior to construction of the Utah Lake levee. Wetland I2 did not appear to contain suitable habitat for Ute lady's tresses.

March 12, 2013

Wetland I3.

Wetland Size: 15.9 acres

Wetland Classification: Depressional



Summary: Wetland I3 is a depressional, ephemeral wet meadow. The wetland is located adjacent to a canal along the Utah Lake levee. It is dominated by saltgrass and foxtail barley (*Hordeum jubatum*). Additional species include lambsquarters and western wheatgrass (*Pascopyrum smithii*). The disturbance level is high due to frequent grazing activity within the wetland. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. Wetland I3 was likely a marshy lacustrine fringe prior to construction of the Utah Lake levee. Wetland I3 did not appear to contain suitable habitat for Ute lady's tresses.

March 12, 2013

Wetland I3B.

Wetland Size: 0.1 acre

Wetland Classification: Depressional (No Photo Available)

Summary: Wetland I3B is a depressional, ephemeral wet meadow. The wetland is located within the restored 16.85-acre Provo City mitigation area. It is dominated by reed canarygrass (*Phalaris arundinacea*), saltgrass, and foxtail barley. Wetland I3B is a restored wetland that is isolated from the Despain parcel by a fence. The fence prevents grazing and the disturbance level is low. The hydrology of the wetland has been altered and the surrounding wetlands are drained through a series of irrigation canals. During high water years water is pumped out of the wetland to Utah Lake to limit flooding and allow grazing of the surrounding Despain parcel. Wetland I3 did not appear to contain suitable habitat for Ute lady's tresses.

March 12, 2013

Wetland I4.

Wetland Size: 28.0 acres

Wetland Classification: Depressional



Summary: Wetland I4 is a depressional, ephemeral wet meadow. The wetland is located adjacent to a canal along the Utah Lake levee. It is dominated by lambsquarters, saltgrass, and foxtail barley. Additional species include western wheatgrass. The disturbance level is high due to frequent grazing activity within the wetland. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. Wetland I4 was likely a marshy lacustrine fringe wetland prior to construction of the Utah Lake levee. Wetland I4 did not appear to contain suitable habitat for Ute lady's tresses.

Wetland I5.

Wetland Size: 30.2 acres

Wetland Classification: Depressional



Summary: Wetland I5 is a depressional, seasonally flooded wet meadow. The vegetation is dominated by common spikerush and rough cocklebur (*Xanthium strumarium*). Additional species include chairmaker's bulrush and lambsquarters. The disturbance level within this wetland is high due to frequent grazing activity and significant infestation of invasive species. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. Wetland I5 was likely a wet meadow or forested lacustrine fringe prior to construction of the Utah Lake levee. Wetland I5 did not appear to contain suitable habitat for Ute lady's tresses due to the high cover of rough cocklebur.

March 12, 2013

Wetland I6.

Wetland Size: 7.6 acres

Wetland Classification: Depressional



Summary: Wetland I6 is an emergent wetland with a mix of native and nonnative species dominated by annual ragweed (*Ambrosia artemisiifolia*), spotted joe pye weed (*Eupatorium maculatum*), hardstem bulrush (*Schoenoplectus acutus*), meadow fescue (*Schedonorus pratensis*), Nuttall's sunflower (*Helianthus nuttallii*), common threesquare (*Schoenoplectus pungens*), wild mint (*Mentha arvensis*), spearmint (*Mentha spicata*), spotted ladythumb, water knotweed (*Polygonum amphibium*), reedtop (*Agrostis gigantea*), and quackgrass (*Elymus repens*). The disturbance level is high due to heavy grazing, several drainage ditches, and other structures. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. The soils are organic and hydrology is seasonal freshwater. Wetland I6 does appear to contain suitable habitat for Ute lady's tresses; however, the species has not been documented here and was not observed during the site visit.

Wetland I7.

Wetland Size: 2.4 acres

Wetland Classification: Depressional



Summary: Wetland I7 is an ephemeral forested wetland. The dominant vegetation consists of eastern cottonwood (*Populus deltoides*), rough cocklebur, and water sedge, along with common spikerush, arctic rush (*Juncus arcticus*), and lambsquarters. The disturbance level is high due to heavy grazing and adjacent drainage ditches. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. This wetland is near known Ute lady's tresses habitat (Wetlands I14 and I8); however, 2 years of surveys were performed in the area and the plant was not observed within wetland I7.

March 12, 2013

Wetland I8.

Wetland Size: 0.5 acre

Wetland Classification: Slope (Raised Fen)



Summary: Wetland I8 is representative of two seasonally persistent raised fen wetlands with peat soils. The vegetation is dominated by beaked spikerush (*Eleocharis rostellata*), water sedge, arctic rush, and chairmaker's bulrush. Additional species include rough cocklebur, small flower paintbrush (*Castilleja exilis*), and common threesquare. The disturbance level is high due to grazing and hydrologic alteration. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. This wetland is documented habitat for Ute lady's tresses.

Wetland I9.

Wetland Size: 0.4 acre

Wetland Classification: Slope (Raised Fen)



Summary: Wetland I9 is a seasonally persistent raised fen with peat soils. The vegetation is dominated by beaked spikerush, chairmaker's bulrush, and common spikerush. Additional species include spearmint, creeping bentgrass (*Agrostis stolonifera*), and water sedge. The disturbance level is high due to grazing activity and hydrologic manipulation from irrigation pumps and associated ditches. A documented Ute lady's tresses population occurs in Wetland I9 with one individual observed during 2012 surveys.

March 12, 2013

Wetland I10.

Wetland Size: 0.4 acre

Wetland Classification: Slope (Raised Fen)



Summary: Wetland I10 is a seasonally persistent raised fen with peat soils. The vegetation is dominated by beaked spikerush and clustered field sedge (*Carex praegracilis*). Additional species include common spikerush, water sedge, annual rabbitsfoot grass (*Polypogon monspeliensis*), and marsh verbena (*Verbena hastata*). The disturbance level is high due to grazing activity and hydrologic manipulation from irrigation pumps and associated ditches. Ute lady's tresses populations have been documented within this habitat type. No occurrences of Ute lady's tresses were documented within Wetland I10 in 2012.

Wetland I11.

Wetland Size: 1.1 acres

Wetland Classification: Depressional



Summary: Wetland I11 is an ephemeral forested wetland with peat soils located adjacent to the Utah Lake levee. The vegetation consists solely of a stand of mature eastern cottonwood trees. There is little to no ground cover within the wetland due to extensive trampling by cattle. The disturbance level is high as a result of hydrologic manipulation and heavy grazing activity. The hydrology is controlled by a series of irrigation pumps and canals and the area is frequently drained for agricultural use. Wetland I11 does not contain suitable habitat for Ute lady's tresses.

Wetland I12.

Wetland Size: 1.2 acres

Wetland Classification: Slope (Raised Fen)



Summary: Wetland I12 is a seasonally persistent raised fen with peat soils. The vegetation is dominated by Canada thistle (*Cirsium arvense*). Additional species include spearmint, spotted joe pye weed, reed canarygrass, and broadleaved pepperweed (*Lepidium latifolium*). The wetland is located immediately adjacent to an irrigation canal and the Utah Lake levee. The disturbance level is high due to heavy grazing and hydrologic manipulation. The wetland is drained for agricultural purposes. Wetland I12 did not appear to contain suitable habitat for Ute lady's tresses due to heavy weed infestation.

March 12, 2013

Wetland I13.

Wetland Size: 0.9 acre

Wetland Classification: Slope (Raised Fen)



Summary: Wetland I13 is a seasonally persistent raised fen with peat soils. The vegetation is dominated by annual ragweed and Canada thistle. Additional species include spearmint, spotted joe pye weed, reed canarygrass, and broadleaved pepperweed. The wetland is located immediately adjacent to the Utah Lake levee. The disturbance level is high due to heavy grazing and hydrologic manipulation. The wetland is regularly drained for agricultural purposes. Wetland I13 did not appear to contain suitable habitat for Ute lady's tresses due to the high percent cover of tall weedy species.

March 12, 2013

Wetland I14.

Wetland Size: 18.8 acres

Wetland Classification: Depressional



Summary: Wetland I14 is a depressional marsh wetland disconnected from Utah Lake by the Utah lake levee. The vegetation is dominated by water sedge and creeping bentgrass. Other species found in the wetland include arctic rush, jointleaf rush (*Juncus articulatus*), strawberry clover (*Trifolium fragiferum*), annual ragweed, and Ute lady's tresses. The disturbance level is high due to frequent grazing activity. The wetland is semi-permanently flooded. However, the hydrology of the wetland is controlled via a system of irrigation pumps and canals and is often drained for agricultural use. A population of Ute lady's tresses was documented in I14 during the 2012 field survey.

March 12, 2013

Wetland I15.

Wetland Size: 0.2 acre

Wetland Classification: Depressional



Summary: Wetland I15 is an ephemeral wet meadow isolated by cultivated farm fields. The vegetation is dominated by a mixture of native and nonnative species including western wheatgrass, foxtail barley, strawberry clover, and western seapurslane (*Sesuvium sessile*). The disturbance level is high due to cultivation and grazing associated with the property surrounding the wetland. Wetland I15 did not appear to contain suitable habitat for Ute lady's tresses.

March 12, 2013

Wetland I16.

Wetland Size: 0.1 acre

Wetland Classification: Depressional (No Photo Available)

Summary: Wetland I16 is a depressional marsh located at the corner of Boat Harbor Drive and the Despain parcel driveway. The vegetation is dominated by cattail (*Typha* spp.) and reed canarygrass. The wetland is accessible to cattle but does not appear to be heavily impacted by grazing. Hydrology for this wetland may be tied to an irrigation ditch but is not connected to a natural water body. Wetland I16 does not appear to contain suitable habitat for Ute lady's tresses.

Wetland I17.

Wetland Size: 3.1 acres

Wetland Classification: Slope (Raised Fen)



Summary: Wetland I17 is a series of restored seasonally persistent raised fens with peat soils located in the Provo City mitigation area. The vegetation is dominated by Canada goldenrod (*Solidago canadensis*), arctic rush, common spikerush, small flower paintbrush, and spearmint. There is very little disturbance within the wetland as it is fenced off to prevent grazing and other agricultural impacts. The surrounding wetland hydrology is controlled by a series of pumps and canals in an effort to drain wetlands and allow grazing on the Despain parcel. Wetland I17 is documented habitat for Ute lady's tresses.

Wetland I18.

Wetland Size: 1.9 acres

Wetland Classification: Depressional



Summary: Wetland I18 is an ephemeral wet meadow located within the Provo City mitigation area. The vegetation is dominated by reed canarygrass. The disturbance in the wetland is minimal as it is surrounded by a low berm and fenced to prevent grazing activity. The surrounding wetland hydrology is controlled by a series of pumps and canals in an effort to drain wetlands and allow grazing on the Despain parcel. Wetland I18 did not appear to contain suitable habitat for Ute lady's tresses due to the high cover of reed canarygrass.

March 12, 2013

Wetland I19.

Wetland Size: 7.3 acres

Wetland Classification: Depressional



Summary: Wetland I19 is a restored depressional marsh located within the Provo City mitigation area. The vegetation is dominated by hardstem bulrush, cattail, common duckweed (*Lemna minor*), arctic rush, and common spikerush. The disturbance level is minimal as the wetland is surrounded by a low berm and fenced off from the adjacent grazing pastures. The wetland is semi-permanently flooded. The surrounding wetland hydrology is controlled by a series of pumps and canals in an effort to drain wetlands and allow grazing on the Despain parcel. Wetland I19 does not appear to contain suitable habitat for Ute lady's tresses.

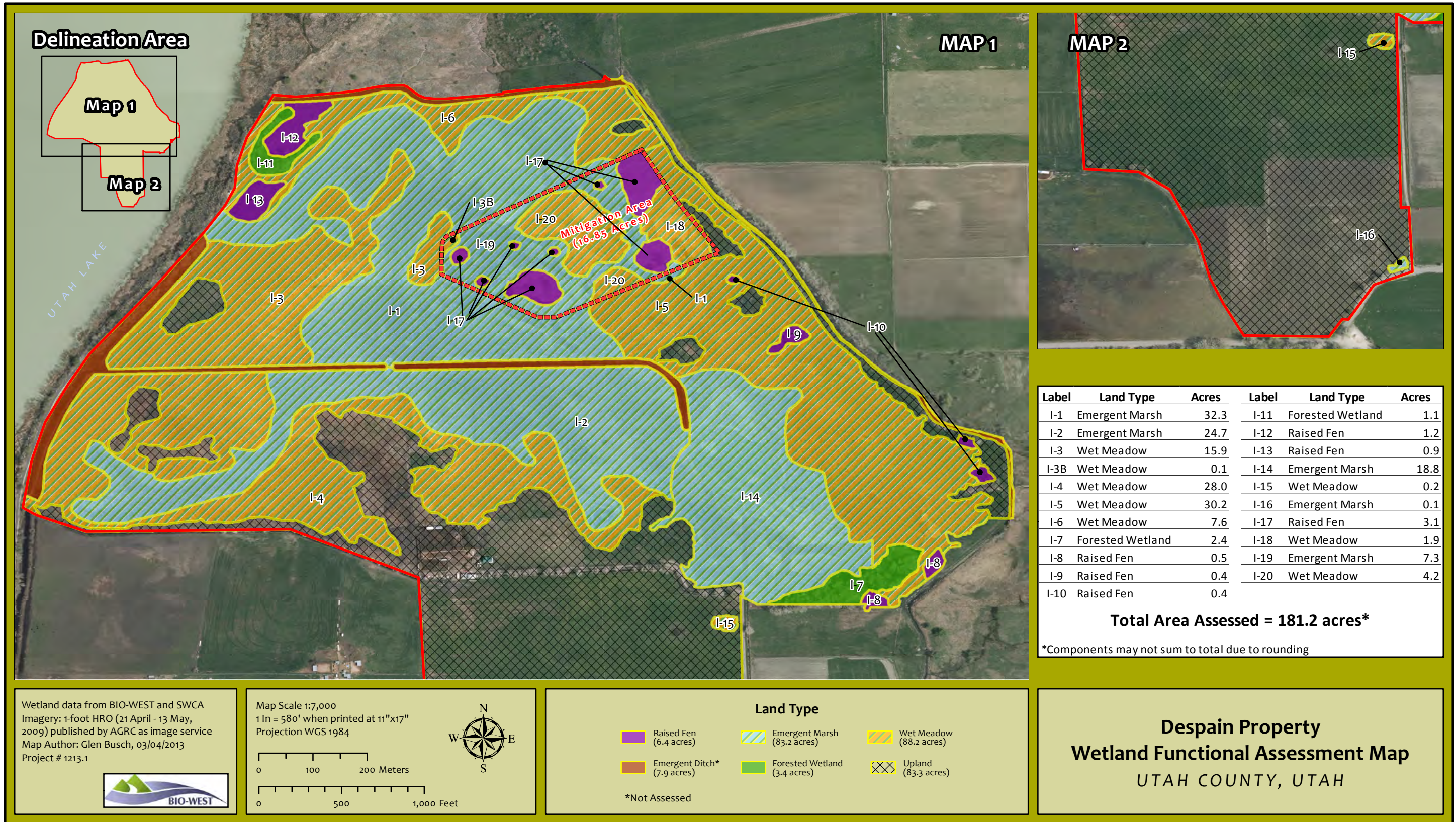
Wetland I20.

Wetland Size: 4.2 acres

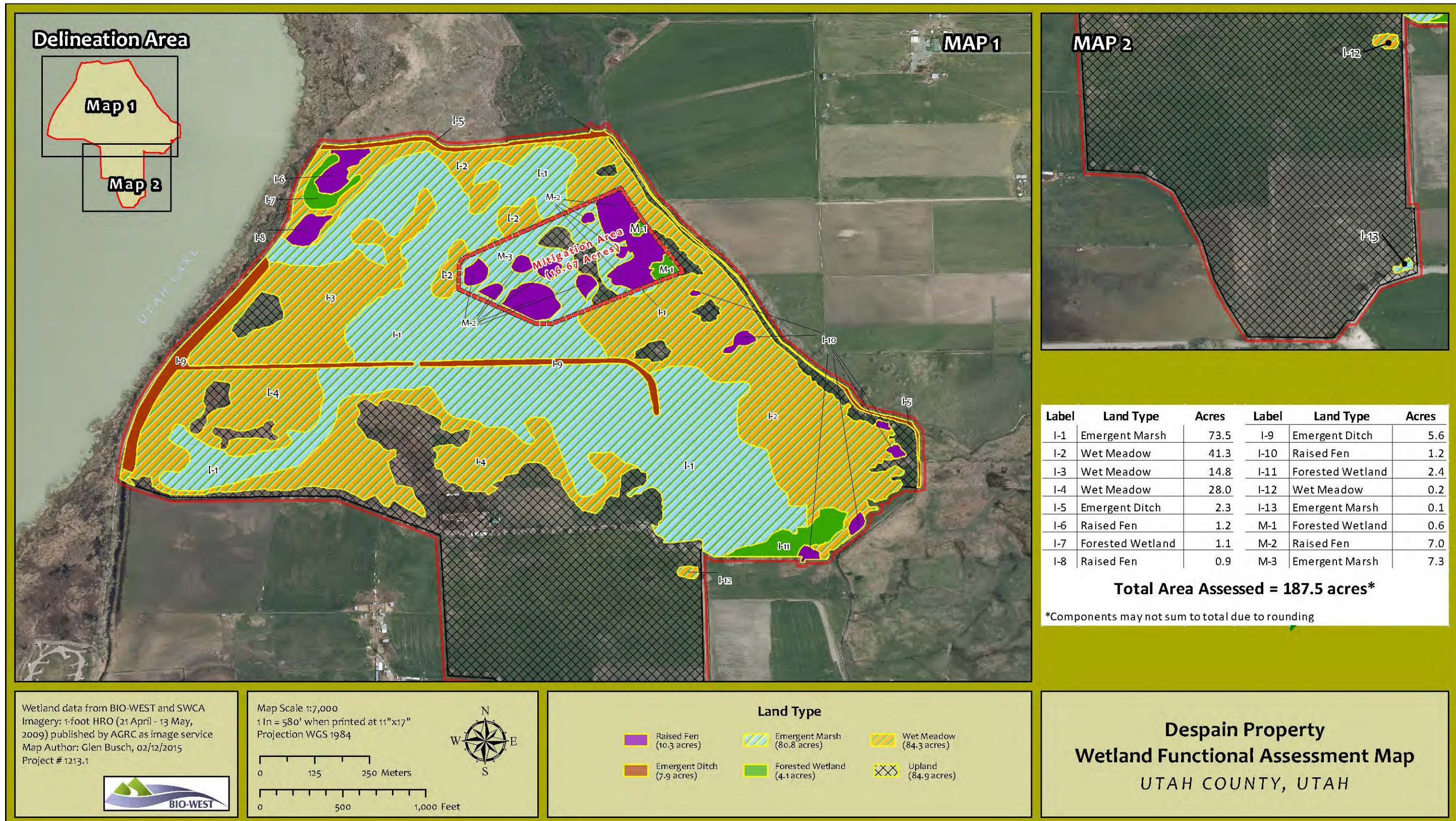
Wetland Classification: Depressional



Summary: Wetland I20 is an ephemeral wet meadow located within the Provo City mitigation area. It is dominated by reed canarygrass with some western wheatgrass. Disturbance within the wetland is minimal as the entire mitigation area is surrounded by a low berm and fenced off from adjacent grazing pastures. The surrounding wetland hydrology is controlled by a series of pumps and canals in an effort to drain wetlands and allow grazing on the Despain parcel. Wetland I20 does not appear to contain suitable habitat for Ute lady's tresses.



Assessment Map Used For Agency Scoring



Revised Assessment Map (Matches Scoring Sheet Included in this Memo Above)

UDOT

Utah Department of Transportation

Wetland Functional Assessment Method

Prepared for Utah Department of Transportation



April 2006



UDOT

Utah Department of Transportation

Wetland Functional Assessment Method

Prepared for Utah Department of Transportation

April 2006

Prepared by
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THE ASSESSMENT FORM

1. Project Name

Enter the appropriate project name.

2. Project Number

Enter the appropriate project number, if applicable.

3. USCOE Permit Number and Project Pin

Number: Enter the appropriate control numbers, if applicable.

4. Evaluation Date

Enter the date(s) that the field evaluation was conducted.

5. Evaluating Agency

Fill in the appropriate agency (for UDOT projects, this will generally be “UDOT”)

6. Evaluator(s)

Enter the names and/or affiliation of the personnel conducting the evaluation.

7. Purpose of Evaluation

Check the appropriate project category.

8. Wetland/ Site Number(s)

Enter the wetland identification number(s) e.g., Fish Creek), if applicable.

9. Wetland Location(s)

Enter the appropriate ecoregion, watershed, county, legal description, stationing or mileposts and the eight-digit watershed descriptor (U.S. Department of the Interior, U.S. Geological Survey 2002, <http://ut.water.usgs.gov/gis/hub.html>), global positioning satellite (GPS) reference number (if available, not required), and other desired location information for the evaluated wetlands.

10. Wetland Size

Enter the estimated or measured (not required) size of the entire wetland that includes the assessment area (AA). If the AA is delineated such that the entire wetland is included, the responses to 8 and 9 will be the same. If evaluating more than one AA on a single data form, enter the average wetland size or the range of wetland sizes.

11. Assessment Area (AA)

Indicate the estimated or measured (not required) acreage within the boundaries of the AA using the guidance below. If splitting a wetland into more than one AA, indicate the AA boundaries on the wetland

delineation map. Wetlands bisected by roads are considered as a single AA. If evaluating more than one AA another data form will be needed. Several example Assessment Areas relative to highway projects are provided in Appendix B.

The AA includes only the portion of delineated jurisdictional wetland that is within a proposed project zone, right-of-way, construction easement, permit area, known detour area, etc.

11a Expanded Assessment Area (EAA)

This area is determined by extending all boundaries of the AA (the portion of the delineated jurisdictional wetland that is within a proposed project zone, right-of-way, construction easement, permit area, known detour area, etc. to a distance of 600 feet. Wetlands with open water that have not been delineated as jurisdictional wetland, apply A or B to determine the EAA.

A contiguous up and downstream from the project to physical points of significant hydrologic change (natural [geomorphic] or man made constrictions or expansions, points where the gradient changes rapidly, points of significant inflow) [e.g., tributaries] or places where other factors limit hydrologic interaction or

B contiguous up and downstream from the project to a maximum distance of 600 feet if no points of significant hydrologic change (including termination of the wetland) occur within this radius.

This “expanded” area is used to evaluate contextual factors such as level of disturbance that may affect wetland function. For riverine wetlands the EAA is extended 600 feet perpendicular to the stream channel and is extended upstream and downstream as determined by A or B.

12. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals and State Listed S1 Species

A “red flag” attribute, this field assesses habitat for species receiving protection under provisions of the Endangered Species Act; that is, listed or proposed threatened or endangered species. Potential effects to threatened and endangered species are examined by the COE during 404 permit application reviews. According to the COE general conditions for Nationwide 404 permits, “no activity is authorized which is likely to jeopardize the continued existence of a threatened or endangered species or a species

proposed for such designation, as identified under the Endangered Species Act or which is likely to destroy or adversely modify the critical habitat of such species". The most current list of threatened and endangered species for Utah and state listed S1 species can be found at: <http://dwr.cde.nv.utah.gov/ucde/> Presence must be observed and recorded by a qualified observer. State listed S1 (although S1 species do not receive protection by statute they should be given special consideration) species should also be considered in Step 12. It is recommended that the evaluator contact the U. S. Fish and Wildlife Service with regard to presence or absence of threatened or endangered species and UDWR for presence or absence of state listed S1 species.

Primary Habitat: Habitat essential to the short or long-term viability of individuals or populations. The presence of traditional breeding, spawnings, nesting, denning or critical migratory habitat, large seasonal congregations (including communal roosts, staging habitat, traditional foraging congregations, etc.), or USFWS or UDWR - designated critical habitat or core areas in the AA indicates primary habitat, as does any occurrence of a T&E plant or S1 species. If T&E or S1 species habitat is documented at the AA, indicate the source of the documentation.

As previously noted, if the project site is documented habitat for TorE species or state listed S1 species it is assigned to the Red Flag Category. In cases where threatened or endangered species are involved and formal consultations are required, the FWS will respond to the action agencies Biological Assessment with their own Biological Evaluation. The Biological Evaluation will identify "reasonable and prudent" conservation alternatives from which UDOT or the consulting agency can select, or serve as a basis for negotiating an alternative amenable to all parties. If the AA is not documented primary habitat for threatened or endangered species or state listed S1 species and the AA is not automatically classified in the Red Flag Category, it may nevertheless be an important habitat component for them. Thus in question 15c, the evaluator will be asked to determine whether the AA is primary suspected habitat, secondary documented or suspected habitat, or incidental habitat for threatened or endangered species or S1 species.

13. Selecting a Wetland Classification

Wetland classes found in Utah are riverine, slope, depression, mineral flats, and lacustrine. A classification hierarchy showing systems, subsystems, classes and subclasses for Utah Wetland Classification (UWC) is provided in Keate (2004) Appendices D and E.

For number 13, enter the UWC that applies to the AA using the UWC (Keate 2004) classification system.

Note: topographic maps and aerial photographs should be studied prior to field evaluation to assist in determining wetland classification.

- ❑ **Riverine wetlands:** Occur in floodplains and riparian corridors in association with stream channels. Water source is river or stream flow or overbank flow at peak hydrological periods. (Overbank flow should occur once every two years or 50% of the time. If flooding does not occur at this minimal rate, it is probably not a riverine based wetland). Dominant hydrodynamics are unidirectional and horizontal. A subsurface hydraulic connection between the wetland and stream does not necessarily indicate a riverine system.
- ❑ **Slope wetlands:** Occur at points of surface changes, breaks in slope or stratigraphic changes. Surface water runoff and groundwater outflow (i.e. – spring or seep) are the primary water sources. Water flow is unidirectional (down slope/gradient). Water may discharge to a stream, lake or depression. Wetland complexes can be comprised of a slope wetland with several depressions or low-points interspersed throughout. Relying on topographic maps, aerial photographs, and field evaluation will help determine which classification is dominant and or most appropriate.
- ❑ **Depressional wetlands:** Occur in topographic depressions with closed contours. Water sources are precipitation, runoff and groundwater. Water flow vectors are toward the center of the depression. Dominant hydrodynamics are vertical. May or may not have inlets or outlets. Depressions that are full, may release water down slope/gradient and tend to be a part of a larger slope complex. Relying on topographic maps, aerial photographs, and field evaluation will help determine which classification is dominant and or most appropriate.
- ❑ **Mineral Flat wetlands:** Occur on large relict lakebeds. Dominant water source is precipitation. Dominant hydrodynamics are

vertical. Typically are large features in the landscape, associated with old Lake Bonneville bottom deposits with close proximity to GSL or other large permanent, semi-permanent or ephemeral water bodies. (e.g. – Sevier Lake) Only found in basin and range ecoregions. Example: Great Salt Lake mud flats and salt flats. Subclasses are not known.

- **Lacustrine Fringe wetlands:** Occur adjacent to large lakes and reservoirs. Dominant water source is lake water level. Hydrodynamics are bi-directional. Subject to waves and seiches.
- **Roadside Ditch Wetland:** Any non-jurisdictional wetland <30 feet in width that exists in its entirety within the highway ROW, is an excavated upland and is not connected to any other jurisdictional wetland. Its primary source of hydrology is runoff from the road surface, irrigation overflow, irrigation ditch leakage or non-point surface runoff from an adjacent urbanized area. In addition, to qualify as a roadside ditch wetland the wetland of concern must **not** convey water to any adjacent natural stream, spring or natural or created wetland outside the ROW and must not contain any threatened or endangered species.

14. Subclassification

Identify the subclass, soil type, pH range and water salinity if applicable to the particular wetland class. For detailed subclass information for see Appendices D and E.

15a Level of Disturbance

Disturbance: This field assesses the level of disturbance within the wetland (AA) and the level of disturbance within the expanded assessment area (EAA). The EAA is a 600 foot buffer around the perimeter of the AA. Disturbance at the AA is defined based on land use both at the AA and in the surrounding area (EAA). Land use in surrounding areas can provide a measure of disturbance within AAs and negatively influence their habitat quality even though the AAs themselves may be relatively undisturbed.

Circle the description of the level of disturbance that most closely reflects conditions observed within the AA and the EAA.

Comments: Provide a brief (1 to 2 sentence) descriptive summary of the AA and surrounding area. The description may include dominant species, adjacent land use, proximity to other wetlands, etc.

15b Plant Community Composition

Using the table provided in Appendix G to determine plant community composition for the AA. Plant community composition is defined as layers of vegetation (riverine and lacustrine only), percent ground coverage dominated by native wetland vegetation within the entire AA, and the percent of native wetland to non-native or non-wetland plant species. Observation is used to determine layers of vegetation (riverine and lacustrine only) as well as to estimate percent ground cover dominated by native wetland species in the AA. Estimates of each of these factors are compared with reference standard sites with subclasses as described by Keate (2004) for slope, depression, and mineral flat wetland classes. (see Appendices D, E and F for lists of dominant native vegetation, photographs, plans and cross sections). Reference standard sites for riverine and lacustrine were developed from research by Pagette et al. (1989). For riverine and lacustrine wetlands, first determine site elevation then reference Appendix F.

The native wetland to non-native or non-wetland plant percent is obtained by using transect sampling procedures detailed in Appendix G. The evaluator divides the total number of native wetland plant species by the total number of plants observed.

It is important to note that in some circumstances it may not be possible to conduct a transect protocol as described in Appendix G. For example, heavily wooded areas along a riverine corridor, small size of the AA or fragmented pieces of jurisdictional wetland scattered over the project site. In these circumstances the evaluator(s) should visually assess the vegetation and use their best professional judgment.

15c Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses primary suspected, secondary documented or suspected or incidental documented or suspected use of the AA by federally listed or proposed threatened or endangered species, or documents the AA as unsuitable habitat for threatened or endangered species.

i. Circle S to indicate whether habitat for listed or proposed ToRE species is suspected within the AA at the ascertained level using the definitions provided below. It may be appropriate to indicate more than one use level for multiple species. For example, an AA may contain secondary habitat for bald eagles and incidental habitat for peregrine falcons. List the

species that correspond to each habitat level determined to apply to the AA.

Secondary Habitat:

Habitat that is occasionally or semi-regularly used by a given species, but that is not necessarily essential to the short or long-term viability or individuals or populations. Examples would include non-specific migration areas and occasional forage or perch sites. Primary habitat, as defined above, may occur in the general vicinity (e.g., within the project area, EAA, section, drainage, watershed, etc.), but not in the AA.

Incidental Habitat:

Habitat that receives chance, inconsequential use by a given species or habitat conditions or the known distribution of the species would indicate this level of use. This term implies that, while it may be conceivable that a given species may occur at an AA at a given point in time, the chance is remote and the use is not likely to be repeated.

ii. Rating: Use the highest level habitat (e.g., the level that corresponds to the highest functional point value) determined under **i** to determine the functional point value for the AA. If the AA is not documented Primary Habitat for threatened or endangered species and the AA is not automatically classified as a Category I, it may nevertheless be an important habitat component for them. Thus in question 15c, the evaluator will be asked to determine whether the AA is secondary or incidental habitat for threatened and endangered species.

15d Habitat for Plants or Animals Rated S1, S2, or S3 by the Utah Natural Heritage Program

This field assesses use of or existence in the AA by species rated S2 (imperiled), or S3 (vulnerable) by the UNHP (not including “watch list” species). S1 (critically imperiled) species would have been placed in the Red Flag Category in Step 12. Species within these UNHP categories are inclusive of U.S. Forest Service-listed sensitive species and FWS candidate species that are not subject to the provisions of the Endangered Species Act. To avoid duplication, do not include species listed above under 12 and 15c. Evaluators are encouraged to contact the Utah State University Herbarium (435) 797-1584 if they have T or E plant identification questions. Contact UDWR (801) 538-4700 for plant and wildlife questions and documentation.

i. Circle D or S to indicate whether habitat for these species is documented or suspected within the AA at the ascertained level using the definitions provided

above under 12 and 15c or in the glossary. As discussed in 12, it may be appropriate to indicate more than one habitat level for multiple species. List the species that correspond to each habitat level applying to the AA.

ii. Rating: Use the highest level habitat (e.g., the level that corresponds to the highest functional point value) determined under **i** to determine the functional point value for the AA. If sensitive species habitat is documented at the AA, indicate the source of the documentation.

15e General Wildlife Habitat

This field assesses general wildlife habitat potential within the AA based upon documentation of wildlife use and habitat features. The combination of these two variables is considered to more accurately assess this function than if habitat features alone were used. A site may contain what are perceived to be outstanding habitat features for wildlife, but for reasons difficult to detect (such as presence of toxins, etc.) may only receive minimal to moderate use. Opportunities for enhancement may exist if such a situation were correctable. Conversely, a site may contain few desirable habitat features, but may receive significant use due to a general lack of habitat in the area or other factors and may be under-rated for this function if documented wildlife use was not considered.

Degree of disturbance at a wetland and in the adjacent landscape can greatly influence its use by wildlife. Examples of disturbance include direct conversion, conversion of upland supporting habitats, and encroachment and fragmentation by human activity sources, such as buildings, trails, roads, canals and ditches.

Plant community composition relates to the number of niches in a wetland class as well as its vertical and horizontal structural characteristics as described in the reference standard site. More niches are potentially available as more layers of habitat occur within the range of expected layers for native vegetation and structural characteristics in a given wetland class, so more wildlife species potentially are supported by more structurally complex habitats.

ii. Wildlife Habitat Features: Working from top to bottom within the double vertical lines, circle the appropriate AA attributes in the matrix provided on the data form to arrive at a high (H), moderate (M), or low (L) rating. The first variable considered is the

level of disturbance. The second variable is plant community composition.

Modified Habitat Quality Rating: Consult with the UDWR regional wildlife biologist to determine the level of wildlife use in the AA.

Circle “high” “moderate” or “low” level of use based on the data collected and following consultation with the UDWR regional biologist. For further guidance, refer to the definitions of high, moderate or low to no use provided below. Evidence of use is considered to be indicative of level of use.

High use:

AA is regularly used in high numbers relative to local or transient populations.

Moderate use:

AA is regularly used in small to moderate numbers relative to local populations, or infrequently or sporadically used in any numbers relative to local or transient populations.

Low to No use:

AA regularly, infrequently or sporadically used by extremely small numbers relative to local populations, or receives chance, inconsequential use in any numbers relative to local or transient populations.

iii. Rating: Determine and circle the general wildlife habitat rating and functional points for the AA by applying the results of **i** and **ii** to the matrix provided in the data form.

15f General Fish/ Aquatic Habitat

This field assesses general fish and aquatic habitat at the AA based upon the presence of certain groups of fish and habitat features. In Utah this only applies to riverine and lacustrine wetlands. Assess this function only if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish (e.g., fish use is precluded by perched culvert or other barrier, etc.). If the AA is not or was not historically used by fish due to lack of habitat (including duration of surface water), excessive gradient, etc. (e.g., the AA does not have the opportunity to provide habitat for fish), circle **NA** where indicated on the data form and proceed to the next function. The maximum duration of surface water (any water above the ground surface that is available to wildlife; not necessarily open water) covering at least 10% of the AA. The 10 percent criterion should be considered a rule of thumb and is

intended to be applied primarily at smaller (e.g., less than 1 or 2 acres), rather than larger sites. For example, 9 acres of surface water should not be dismissed at a 100-acre AA simply because this 10 percent guidance is not met. The intent of this criterion is to allow consideration of significant surface water amounts within an AA relative to fish habitat, while disallowing insignificant surface water amounts. The final call will depend on the specific situation at hand, and is therefore left to the evaluator. Abbreviations for surface water durations are as follows: P/P = permanent/ perennial; S/I = seasonal/ intermittent; T/E = temporary/ ephemeral; and A = absent where:

Permanent/ perennial:

Surface water is present throughout the year except during years of extreme drought.

Seasonal/ intermittent:

Surface water is present for extended periods, especially early in the growing season, or may persist throughout the growing season, but may be absent at the end of the growing season; or surface water does not flow continuously, as when water losses from evaporation or seepage exceed the available stream flow.

Temporary/ ephemeral:

Surface water is present for brief periods during the growing season, but the water table is well below the surface for most of the year; or surface water flows briefly in response to precipitation in the immediate vicinity and the channel is above the water table.

Variables assessed to determine a rating for habitat quality include duration of surface water, structural cover, shading, and habitat availability. Presence of surface water is an obvious critical component of fish habitat. Seasonally flooded areas can be important nursery and foraging areas for fish (and can result in “high” habitat quality ratings using this assessment); however, longer duration of surface water generally results in higher ratings because surface waters of such duration are available to fish for greater periods and varieties of life stages. Flow or water level stability is an important habitat component for a variety of fish species.

Abundant structural cover and well-vegetated stream banks and shorelines are also important habitat components for several fish species. Structural cover such as submerged logs and vegetation, other woody debris, floating-leaved vegetation, and large rocks provides resting areas, refuge from predators, hiding areas from predators, and functions as a substrate for

insect larva; an important food source for many fish species. High water temperatures that result from removal of streamside vegetation can render habitat as unsuitable for fish that are sensitive to higher temperatures, such as Bonneville cutthroat trout. Vegetation along streams, ponds, and lakes also provides insect habitat, an important food source for many fish species.

Although the physical habitat attributes of a site may be attractive to fish, use of the area may be significantly reduced or precluded due to the presence of inadequately sized culverts, dikes, continual sources of degradation, or other causes. Consequently, potential “habitat modifiers” are also considered in the assessment.

The presence of certain groups of fish in the AA is considered along with habitat features to derive an overall fish/aquatic habitat rating. UDWR seeks to preserve and enhance all desirable aquatic species and their supporting ecosystems. To accomplish this UDWR continues to develop and implement policies and programs that foster sound management of wild fish populations and their habitats, at the same time that it monitors and regulates angler harvests, maintains recreational activities for anglers, and provides improved access to fisheries.

Given these management priorities (managing for wild fish populations **and** recreational opportunities), the following groups of fish are considered in the assessment in order of descending “rank:” native game sport fish; introduced game fish; non-game fish; and no fish.

As listed in the 2004 Utah Fishing Proclamation, Utah native sport fish include: Mountain, Bonneville and Bear Lake Whitefish, Bonneville Cisco and four subspecies of Cutthroat Trout, Bear Lake, Bonneville, Colorado and Yellowstone. Non-native coldwater sport species include: Rainbow Trout, Lake Trout, Brook Trout, Arctic Grayling, Kokanee Salmon and Brown Trout. Cool and warm water sport fish include: Walleye, Yellow Perch, Striped Bass, White Bass, Smallmouth Bass, Largemouth Bass, Bullhead, Channel, Catfish, Black Crappie, Green Sunfish and Bluegill. Hybrid sport fish include: Tiger Muskeelunge, Tiger Trout and Splake. Non-game fish include: Carp, Utah Sucker and Utah Chub. The June Sucker is an endangered species. Threatened species and state species of concern can be found at <http://dwr.cd.ncr.utah.gov/ucdc/>.

i. Habitat Quality: Working from top to bottom within the double vertical lines, circle the appropriate AA attributes in the matrix provided on the data form to arrive at a high (H), moderate (M), or low (L) rating. The first variable considered is the maximum duration of surface water in the AA. Use the definitions provided above. The second variable is structural cover. Estimate the percentage of the waterbody within the AA that contains cover objects such as submerged logs, large rocks and boulders, overhanging banks, and submerged and floating-leaved vegetation. The final variable is shading, as determined by estimating the percent of stream bank or shoreline within the AA that contains wetland or riparian scrub-shrub or forested communities. This will determine the rating for habitat quality.

ii. Modified Habitat Quality: Circle the appropriate response to the following question: Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the UDEQ list of waterbodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support? If the answer is yes, then reduce the habitat quality rating determined in **i** above by .1. If the answer is no, then do not modify the habitat quality rating determined in **i**.

iii. Rating: Determine and circle the general fish/aquatic rating and functional points for the AA by applying the results of **i** and **ii** to the matrix provided in the data form. The term “native” implies a species indigenous to Utah; not necessarily to a given drainage or water body. The evaluator is referred to *Fishes of Utah* (Sigler and Miller 1963) for the status (native vs. introduced) of fish species known or suspected to occur in the AA.

15g Amphibian Habitat

This field assesses general amphibian habitat potential at the AA. The assessment is based upon the presence of water quality and habitat characteristics that could support amphibians or document amphibian use of the AA. The level of amphibian use of the AA or the potential of the AA to support amphibians is determined through consultation with a UDWR regional biologist. If amphibians are present in the AA or habitat and water quality characteristics are such that they could support amphibians add .2 under the functional points rating column in the Functional Assessment Rating section.

PROVO RIVER DELTA RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix E: Coordination Letters

**MEMORANDUM OF UNDERSTANDING
AMONG JOINT-LEAD AND COOPERATING AGENCIES**

for

**PROVO RIVER DELTA RESTORATION PROJECT
NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE**

I. INTRODUCTION

This Memorandum of Understanding (MOU) is made this 11th day of February, 2011. The Department of the Interior – Central Utah Project Completion Act Office (Interior), Utah Reclamation Mitigation and Conservation Commission (Commission), and the Central Utah Water Conservancy District (District) are proposing the Provo River Delta Restoration Project (PRDRP). The PRDRP is an environmental restoration project designed to help recover the endangered June sucker by restoring wetlands and other habitats along the lower Provo River delta and its interface with Utah Lake, Utah. The project fulfills mitigation commitments for recovery of June sucker, an endangered species, and other fish, wildlife and wetland habitat improvement goals of the Central Utah Project (CUP).

Interior, the Commission and the District are the Joint Lead agencies in complying with analysis and documentation requirements of the National Environmental Policy Act (NEPA) for the proposed project.

The following entities are Cooperating Agencies in NEPA compliance for the PRDRP:

- U.S. Bureau of Reclamation
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- State of Utah
- Utah County
- Provo City

A federal, state, tribal or local agency having special expertise with respect to an environmental issue, or jurisdiction by law may be a Cooperating Agency in the NEPA process. A cooperating agency has the responsibility to assist the lead agency by participating in the NEPA process at the earliest possible time; by participating in the scoping process; in developing information and preparing environmental analyses including portions of the environmental impact statement concerning which the cooperating agency has special expertise; and in making available staff support at the lead agency's request to enhance the lead agency's interdisciplinary capabilities.

Serving as a Cooperating Agency does not constitute endorsement or approval of the project or alternatives evaluated in an Environmental Impact Statement. Rather, by participating in the NEPA process a Cooperating Agency serves to help verify the data and information used in the EIS, within their entity's jurisdiction or areas of expertise, and identify potential issues early in the planning process. Participating as a Cooperating Agency does not imply any cooperator supports or advocates any particular alternative or the project itself nor does the Cooperating Agency abrogate or subrogate any other duties or responsibilities it may have under local, state or federal law.

II. PURPOSE

The purpose of this MOU is to establish the roles and responsibilities of the Joint Lead and Cooperating Agencies with respect to NEPA compliance activities for PRDRP.

III. AUTHORITY AND REFERENCES

- A. Public Law 102-575, October 30, 1992, Central Utah Project Completion Act (CUPCA) (Titles II-VI) as amended.
- B. Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Parts 1500-1508).
- C. Council on Environmental Quality, 40 Questions and Answers about the NEPA Regulations.
- D. U.S. Department of the Interior, Departmental Manual at 516 DM 2.5.
- E. U.S. Department of the Interior, National Environmental Policy Act Handbook.
- F. Executive Order 13352, August 26, 2004, Facilitation of Cooperative Conservation
- G. NEPA Implementation Procedures for the Regulatory Program (33 CFR Part 325, App. B)

IV. PROVISIONS

- A. Decisions regarding NEPA compliance document content are the ultimate responsibility of the Joint-Lead Agencies.
- B. Each party to this Agreement has an interest, jurisdiction or expertise regarding the PRDRP.

C. The Joint-Lead Agencies will:

1. Prepare and maintain schedules, public involvement, administrative documents, and will provide Cooperating Agencies with informational copies as appropriate. All agencies share responsibility to meet schedules and provide quality work.
2. Provide Cooperating Agencies advance notice of review points and time periods of no less than two weeks for review, and will further provide opportunities to review with NEPA-related products.
3. Be responsible for preparation of responses to comments on the NEPA document, but will seek assistance from Cooperating Agencies in responding to comments on issues in which the agencies have jurisdiction or special expertise.
4. Have the ultimate decision making authority for the scope and development of the NEPA document including Purpose and Need, Alternatives, Affected Environment, and Environmental Effects.
5. Prepare and sign a Record of Decision(s) based on the analysis presented in the EIS.

D. Cooperating Agencies will:

1. Participate in NEPA compliance document development and review under the regulations of the CEQ and the Cooperating Agency's NEPA implementing regulations, if applicable.
2. Designate one Principal Coordinator as a single point of contact for development of the NEPA document.
3. Provide technical information, advice, and review on topics, resources and environmental impacts including, but not limited to, those areas in which the agency has jurisdiction or special expertise as defined by CEQ. Prepare, review and edit text, responses to public comments, tables and other media as assigned by the Joint-Lead Agencies.
4. Review, comment and provide written input for all documents and review materials within mutually agreed upon timeframes set by the Joint-Lead Agencies in consultation with the Cooperating Agencies.
5. Subject to the Freedom of Information Act, (5 U.S.C. §552 as amended by Public Law No. 104-231), keep all information, data and documents provided by the Joint-Lead Agencies, and also comments associated with the Cooperating Agencies review, confidential and not available to anyone other than the parties to this (MOU), unless such

information, data, documents, comments, etc. are released to the public by the Joint-Lead Agencies.

6. Fund their respective agency's participation in meetings, data collection, studies, document preparation or review tasks under this MOU.

7. Recognize the Joint-Lead Agencies' ultimate authority and responsibility for managing the NEPA process, developing the NEPA document, and preparing their Record of Decision as to which alternative, if any, to implement.

V. OTHER RESPONSIBILITIES

Nothing in this MOU will be construed to amend or abridge the authority of the agencies to carry out their responsibilities under the provisions of the NEPA, CEQ regulations and guidance, or other specific mandates and legal responsibilities.

VI. IMPLEMENTATION AND TERMINATION

A. This Agreement is effective on the date indicated above and shall be valid for a period of 5 years. At the end of this 5-year period, this Agreement can be reviewed and if necessary reaffirmed in writing by all signatories.

B. This Agreement may be modified by letter of agreement from the Joint-Lead Agencies with the concurrence of each Cooperating Agency. Any modification shall be confirmed in writing prior to the change.

C. Any signatory party may terminate their participation in this MOU by providing written notice to all other parties, effective 60 days following the date of delivery of such notice. One or more of the Joint-Lead Agencies may terminate the Cooperating Agency status of any party to this contract as provided in guidance from CEQ.

D. This MOU does not in any manner affect statutory authorities and responsibilities of the Cooperating/Participating Agencies.

E. This Agreement may be signed in any one or more counterparts which together will constitute a binding agreement.

VII. EXECUTION ON BEHALF OF COOPERATING AND JOINT LEAD AGENCIES

JOINT LEAD AGENCIES

**Department of the Interior
CUPCA Office**


CUPCA Program Director Date 2/11/11

**Utah Reclamation Mitigation
and Conservation Commission**


Executive Director Date 2/17/11

Central Utah Water Conservancy District

Approved:


General Manager Date 2-16-2011



Regional Solicitor Date 2/17/11

COOPERATING AGENCIES

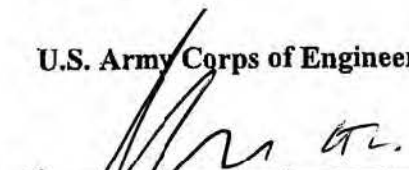
U.S. Bureau of Reclamation


Area Manager Date 2/11/11

U.S. Fish and Wildlife Service


Field Supervisor Date 2/23/11

U.S. Army Corps of Engineers


William J. Leady, P.E.
Colonel, U.S. Army
District Commander Date 7 MAR 2011

THIS SIGNATURE PAGE IS A COMPOSITE OF INDIVIDUALLY SIGNED PAGES. ORIGINALS ON FILE WITH THE MITIGATION COMMISSION.

State of Utah

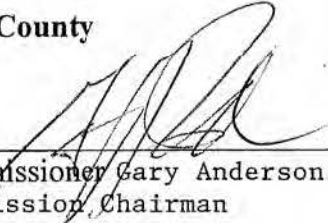


2/23/11

John Harja, Director
Public Lands Policy Coordination Office

Date

Utah County



03-15-2011

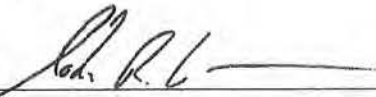
Commissioner Gary Anderson
Commission Chairman

Date



Attest

Provo City



3/29/11

Mayor

Date



Attest



UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East, Suite 230, Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

October 20, 2010

Mr. David Wham
Utah Division of Water Quality
PO Box 144870
Salt Lake City, UT 84114-4870

Subject: Provo River Delta Restoration Project Environmental Impact Statement Kick-Off Meeting

Dear Mr. Wham:

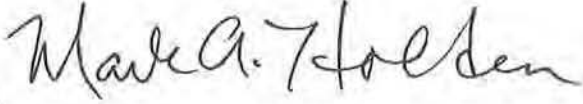
We are writing to invite your attendance at a kick-off meeting sponsored by the three Joint-Lead Agencies preparing an environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to discuss participation by Cooperating Agencies, and the formation of an interdisciplinary planning team to assist the Joint Lead Agencies in preparing technical information for the EIS. The meeting will be held on November 1, 2010 at 2:00 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

The Council on Environmental Quality (CEQ) defines a Cooperating Agency as an agency possessing jurisdiction by law or special expertise that is relevant to an environmental impact associated with a proposed Federal action that is subject to evaluation under NEPA (40 CFR 1508.5). The roles and responsibilities of a Cooperating Agency are set forth in the CEQ regulations at 40 CFR 1501.6. Briefly, these provide that a Cooperating Agency will participate actively in the EIS process and will, primarily, review information and analyses prepared by the joint lead agencies concerning which the Cooperating Agency has jurisdiction or special expertise.

We believe that direct participation by Utah Division of Environmental Quality in the development of the EIS will strengthen and improve the quality of the EIS. Please respond as to your attendance at the November 1 meeting, to Mr. Mark Holden at 801/524-3146 or at mholden@usbr.gov. A copy of an informational brochure about the proposed project is included for your information.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director

Enclosure

cc: Reed Murray Department of Interior
Gene Shawcroft Central Utah Water Conservancy District
Reed Harris Department of Natural Resources
Michael Mills Central Utah Water Conservancy District

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East, Suite 230, Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

October 20, 2010

Mr. Steve Hardegen
Regional Environmental Officer
Federal Emergency Management Agency
US Department of Homeland Security, Region 8
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

Subject: Provo River Delta Restoration Project Environmental Impact Statement Kick-Off Meeting

Dear Mr. Hardegen:

We are writing to invite your attendance at a kick-off meeting sponsored by the three Joint-Lead Agencies preparing an environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to discuss participation by Cooperating Agencies, and the formation of an interdisciplinary planning team to assist the Joint Lead Agencies in preparing technical information for the EIS. The meeting will be held on November 1, 2010 at 2:00 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

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We believe that direct participation by the Federal Emergency Management Agency in the development of the EIS will strengthen and improve the quality of the EIS. Please respond as to your attendance at the November 1 meeting, to Mr. Mark Holden at 801/524-3146 or at

mholden@usbr.gov. A copy of an informational brochure about the proposed project is included for your information.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,

A handwritten signature in black ink that reads "Michael C. Weland". The signature is written in a cursive, flowing style.

Michael C. Weland
Executive Director

Enclosure

cc: Reed Murray Department of the Interior
Gene Shawcroft Central Utah Water Conservancy District
Reed Harris Department of Natural Resources
Michael Mills Central Utah Water Conservancy District

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East, Suite 230, Salt Lake City, UT 84102-2045
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COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

October 20, 2010

Mr. Jason Gipson
Chief, Utah Regulatory Office
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Subject: Provo River Delta Restoration Project Environmental Impact Statement Kick-Off Meeting

Dear Mr. Gipson:

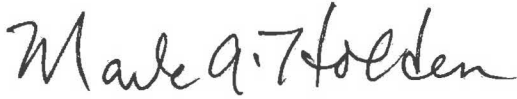
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We believe that direct U.S. Army Corps of Engineers participation in the development of the EIS will strengthen and improve the quality of the EIS. Please respond as to your attendance at the November 1 meeting, to Mr. Mark Holden at 801/524-3146 or at mholden@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director



cc: Reed Murray Department of Interior
Gene Shawcroft Central Utah Water Conservancy District
Reed Harris Department of Natural Resources
Michael Mills Central Utah Water Conservancy District

UTAH RECLAMATION
**MITIGATION
AND CONSERVATION
COMMISSION**

230 South 500 East, Suite 230, Salt Lake City, UT 84102-2045
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Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

October 20, 2010

Mr. Richard Clark
Wetlands and NEPA Coordinator
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

Subject: Provo River Delta Restoration Project Environmental Impact Statement Kick-Off Meeting

Dear Mr. Clark:

We are writing to invite your attendance at a kick-off meeting sponsored by the three Joint-Lead Agencies preparing an environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to discuss participation by Cooperating Agencies, and the formation of an interdisciplinary planning team to assist the Joint Lead Agencies in preparing technical information for the EIS. The meeting will be held on November 1, 2010 at 2:00 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

The Council on Environmental Quality (CEQ) defines a Cooperating Agency as an agency possessing jurisdiction by law or special expertise that is relevant to an environmental impact associated with a proposed Federal action that is subject to evaluation under NEPA (40 CFR 1508.5). The roles and responsibilities of a Cooperating Agency are set forth in the CEQ regulations at 40 CFR 1501.6. Briefly, these provide that a Cooperating Agency will participate actively in the EIS process and will, primarily, review information and analyses prepared by the joint lead agencies concerning which the Cooperating Agency has jurisdiction or special expertise.

We believe that direct U.S. Environmental Protection Agency participation in the development of the EIS will strengthen and improve the quality of the EIS. Please respond as to your attendance at the November 1 meeting, to Mr. Mark Holden at 801/524-3146 or at mholden@usbr.gov. A copy of an informational brochure about the proposed project is included for your information.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Mark A. Holden

Michael C. Weland
Executive Director

Enclosure

cc: Reed Murray Department of Interior
Gene Shawcroft Central Utah Water Conservancy District
Reed Harris Department of Natural Resources
Michael Mills Central Utah Water Conservancy District

UTAH RECLAMATION
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AND CONSERVATION
COMMISSION

230 South 500 East, #230, Salt Lake City, UT 84102
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James F. Karpowitz

April 20, 2011

Mr. Larry Crist, Field Supervisor
U.S. Fish and Wildlife Service
Utah Ecological Services Office
2369 W. Orton Circle, Suite 50
West Valley City, Utah 84119

Subject: Section 7 Consultation for Actions Associated with the Provo River Delta
Restoration Project, Utah County, UT

Dear Mr. Crist:

We appreciate the valuable guidance your agency has provided throughout the planning of this project. During our meeting on February 9, 2011, we discussed how we should initiate Section 7 consultation for the project. Since that time, the U.S. Army Corps of Engineers has designated the Utah Reclamation Mitigation and Conservation Commission as the lead Federal agency for the project for purposes of compliance with Section 7 of the Endangered Species Act (letter dated March 3, 2011; enclosed). They have assigned the project identification number SPK-2010-01394-UO.

As you suggested during the meeting, we entered the project coordinates into the Information Planning and Conservation System (IPAC) database which generated the enclosed project location map. The IPAC database also generated the enclosed list of the threatened, endangered or candidate species that may be affected by the project.

The lack of suitable habitat and the urban nature of the site preclude the Canada lynx, as well as the Yellow-billed cuckoo and Greater sage grouse. Least chub are not known to occur in the project area. For these reasons, the affect of the project on these species will not be examined in detail in the Environmental Impact Statement being prepared for the project.

Ute's ladies-tresses are known to occur on the site and recovery of the June sucker is one of the project needs. For this reason, the affect of the project on these species will be examined in greater detail in the Environmental Impact Statement.

If you have any questions or require additional information, please contact Mr. Richard Mingo, Project Coordinator at 801-524-3146.

Sincerely,



Michael C. Weland
Executive Director

Enclosures

cc: Jim Karpowitz, Utah Division of Wildlife Resources
Sarah Sutherland, Central Utah Water Conservancy District
Lee Baxter, Department of the Interior
Jason Gipson, U.S. Army Corps of Engineers



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

MITIGATION COMMISSION
 OFFICIAL FILE COPY
 CLASSIFICATION _____
 PROJECT _____
 FOLDER _____ CONTROL _____

REPLY TO
 ATTENTION OF

March 3, 2011

MAR - 4 2011

Regulatory Division (SPK-2010-01394-UO)

CODE	INITIALS
MCD1	MCD
MCD2	
MCD4	
MCD5	
MCD7	

Michael Weland, Executive Director
 Utah Reclamation Mitigation and Conservation Commission
 230 South 500 East, Suite 230
 Salt Lake City, Utah 84102-2045

Dear Mr. Weland:

This letter concerns the designation of lead Federal agency for the proposed Provo River Delta Restoration Project. The project is located near the mouth of the Provo River and Utah Lake in Section 33, Township 6 South, Range 2 East, Salt Lake Meridian, Latitude 40.2432°, Longitude -111.7240°, Provo, Utah County, Utah.

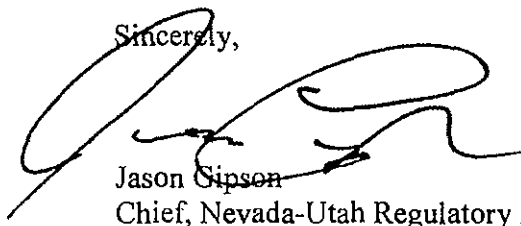
Following early coordination with your agency on November 1, 2010, we hereby designate the Utah Reclamation Mitigation and Conservation Commission as the lead Federal agency to act on our behalf for purposes of compliance with the Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA), to include consultation with the tribes, for the Department of the Army authorization required for the Provo River Delta Restoration Project under Section 404 of the Clean Water Act.

Please provide us with contact information of the archaeologist who will be conducting the study for this project. We must coordinate and approve the Area of Potential Effect prior to the archaeologist initiating the research and site survey. We would also like to be included on correspondence regarding the Section 106 consultation.

When you initiate consultation under Section 7 of the ESA or Section 106 of the NHPA, please include a statement indicating that we have designated the Utah Reclamation Mitigation and Conservation Commission as the lead Federal agency for the project, along with a copy of this letter.

Please refer to identification number SPK-2010-01394-UO in any correspondence concerning this project. If you have any questions, please contact Tim Witman by telephone at 801-295-8380, ext. 17, by email at Timothy.R.Witman@usace.army.mil, or by mail at the Utah Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010.

Sincerely,



Jason Gipson
 Chief, Nevada-Utah Regulatory Branch



U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species-list.

Endangered Species Act species-list information for your project is available online and listed below for the following FWS Field Offices:

UTAH ECOLOGICAL SERVICES FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UT 84119
(801) 975-3330
<http://www.fws.gov>
<http://www.fws.gov/utahfieldoffice/>

Project Name:

Provo River Delta Restoration Project



U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Location Map:



Project Counties:

Utah, UT

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-111.72724 40.25665, -111.72578 40.2563, -111.71367 40.24609, -111.71376 40.24309, -111.71222 40.24317, -111.7105 40.243, -111.71041 40.24197, -111.71007 40.24137, -111.70998 40.24077, -111.71119 40.24051, -111.71161 40.24034, -111.71187 40.23596, -111.72054 40.23571, -111.7208 40.23399, -111.72595 40.2339, -111.73951 40.24017, -111.72724 40.25665)))

Project Type:

Land - Restoration / Enhancement



Natural Resources of Concern

Endangered Species Act Species-list

There are a total of 6 species in your species-list

Species that may be affected by your project: ([View all critical habitat on one map](#))

Birds				
Greater sage-grouse (<i>Centrocercus urophasianus</i>) Population: entire	Candidate	species info		Utah Ecological Services Field Office
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) Population: Western U.S. DPS	Candidate	species info		Utah Ecological Services Field Office
Fishes				
June sucker (<i>Chasmistes liorus</i>)	Endangered	species info	Final designated critical habitat	Utah Ecological Services Field Office
Least chub (<i>Iotichthys phlegethontis</i>)	Candidate	species info		Utah Ecological Services Field Office
Flowering Plants				
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	Threatened	species info		Utah Ecological Services Field Office
Mammals				
Canada Lynx (<i>Lynx canadensis</i>) Population: (Contiguous U.S. DPS)	Threatened	species info		Utah Ecological Services Field Office

FWS National Wildlife Refuges

There are no refuges found within the vicinity of your project.



U.S. Fish and Wildlife Service

Natural Resources of Concern

FWS Migratory Birds

Not yet available through IPaC.

FWS Delineated Wetlands

Not yet available through IPaC.



State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Utah Geological Survey

RICHARD G. ALLIS
State Geologist Division Director

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CLASSIFICATION _____
PROJECT _____
FOLDER _____ CONTROL _____

MAY 16 2011

May 11, 2011

CODE	INITIALS
MC65	RU
MC02	MA

Richard Mingo
Utah Reclamation Mitigation and Conservation Commission
230 South 500 East, Suite 230
Salt Lake City UT 84102

RE: Paleontological Field Search and Recommendations for the Provo River Delta Restoration Project, Utah County, Utah
U.C.A. 79-3-508 (Paleontological) Compliance; Request for Confirmation of Literature Search according to the UDOT/UGS Memorandum of Understanding.

Dear Richard:

I have conducted a paleontological file search for the Provo River Delta Restoration Project in response to a request from Sean Keenan of BIO-WEST, Inc on May 10, 2011.

There are no paleontological localities recorded in our files for this project area. Quaternary and Recent surficial deposits exposed throughout this project area have a low potential for yielding significant fossil localities (PFYC Class 1 – 2). Unless fossils are discovered as a result of construction activities, this project should have no impact on paleontological resources.

If you have any questions, please call me at (801) 537-3311.

Sincerely,

Martha Hayden
Paleontological Assistant

CC: Sean Keenan, BIO-WEST, Inc.



UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

May 16, 2011

Amos Murphy, Acting Chairman
Goshute Indian Tribe
P.O. Box 6104
Ibapah, Utah 84034

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CODE	INITIALS
MCA1	MW
CLASSIFICATION #	ENV-6.00
PROJECT #	PRDRP 3748
FOLDER #	1139682
CONTROL #	

Subject: Provo River Delta Restoration Project, Utah County, Utah

Honorable Chairman Murphy:

A Notice of Intent to prepare an Environmental Impact Statement has been issued for the Provo River Delta Restoration Project (PRDRP). In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking.

The PRDRP is being proposed by the Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies (JLA's). The project is located in Utah County, Utah at the mouth of the Provo River and Utah Lake. The PRDRP is being proposed to facilitate the recovery of June sucker (*Chasmistes liorus*), an endemic fish of Utah Lake which was listed as an Endangered Species in 1986. Under the Proposed Action, the JLA's would realign the Provo River into a new river channel approximately two miles upstream of the confluence with Utah Lake. The realigned Provo River channel would flow into a restored delta ecosystem that would provide the habitat conditions necessary for June sucker to develop to a size that can survive in Utah Lake. This habitat is presently lacking as a result of flow and habitat alterations that have taken place in the historic Provo River delta. Enclosed is a Public Scoping Meeting Handout that provides more information on the project.

If you wish to consult with the JLA's regarding this project, please contact Mr. Mark Holden at (801) 524-3146.

Sincerely,



Michael C. Weland
Executive Director

Enclosure

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

May 16, 2011

Gwen Davis, Chairwoman
Northwestern Band of Shoshone Nation
707 North Main Street
Brigham City, Utah 84302

MITIGATION COMMISSION	
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CODE	INITIALS
MCO1	MCDW
CLASSIFICATION #	
PROJECT #	
FOLDER #	
CONTROL #	

Subject: Provo River Delta Restoration Project, Utah County, Utah

Honorable Chairwoman Davis:

A Notice of Intent to prepare an Environmental Impact Statement has been issued for the Provo River Delta Restoration Project (PRDRP). In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking.

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If you wish to consult with the JLA's regarding this project, please contact Mr. Mark Holden at (801) 524-3146.

Sincerely,



Michael C. Weland
Executive Director

Enclosure

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COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

May 16, 2011

Lori Bear Skiby, Chairwoman
Skull Valley Band of Goshute Indians
P.O. Box 448
Grantsville, Utah 84029

MITIGATION COMMISSION	
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CODE	INITIALS
MEDI	MCS
CLASSIFICATION #	
PROJECT #	
FOLDER #	
CONTROL #	

Subject: Provo River Delta Restoration Project, Utah County, Utah

Honorable Chairwoman Skiby:

A Notice of Intent to prepare an Environmental Impact Statement has been issued for the Provo River Delta Restoration Project (PRDRP). In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking.

The PRDRP is being proposed by the Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies (JLA's). The project is located in Utah County, Utah at the mouth of the Provo River and Utah Lake. The PRDRP is being proposed to facilitate the recovery of June sucker (*Chasmistes liorus*), an endemic fish of Utah Lake which was listed as an Endangered Species in 1986. Under the Proposed Action, the JLA's would realign the Provo River into a new river channel approximately two miles upstream of the confluence with Utah Lake. The realigned Provo River channel would flow into a restored delta ecosystem that would provide the habitat conditions necessary for June sucker to develop to a size that can survive in Utah Lake. This habitat is presently lacking as a result of flow and habitat alterations that have taken place in the historic Provo River delta. Enclosed is a Public Scoping Meeting Handout that provides more information on the project.

If you wish to consult with the JLA's regarding this project, please contact Mr. Mark Holden at (801) 524-3146.

Sincerely,



Michael C. Weland
Executive Director

Enclosure

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen
James Karpowitz

May 16, 2011

Richard Jenks Jr., Chairman
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026-0190

MITIGATION COMMISSION	
OFFICIAL FILE COPY	
CODE	INITIALS
MCO1	mco1
CLASSIFICATION #	
PROJECT #	
FOLDER #	
CONTROL #	

Subject: Provo River Delta Restoration Project, Utah County, Utah

Honorable Chairman Jenks:

A Notice of Intent to prepare an Environmental Impact Statement has been issued for the Provo River Delta Restoration Project (PRDRP). In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking.

The PRDRP is being proposed by the Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies (JLA's). The project is located in Utah County, Utah at the mouth of the Provo River and Utah Lake. The PRDRP is being proposed to facilitate the recovery of June sucker (*Chasmistes liorus*), an endemic fish of Utah Lake which was listed as an Endangered Species in 1986. Under the Proposed Action, the JLA's would realign the Provo River into a new river channel approximately two miles upstream of the confluence with Utah Lake. The realigned Provo River channel would flow into a restored delta ecosystem that would provide the habitat conditions necessary for June sucker to develop to a size that can survive in Utah Lake. This habitat is presently lacking as a result of flow and habitat alterations that have taken place in the historic Provo River delta. Enclosed is a Public Scoping Meeting Handout that provides more information on the project.

If you wish to consult with the JLA's regarding this project, please contact Mr. Mark Holden at (801) 524-3146.

Sincerely,



Michael C. Weland
Executive Director

Enclosure



State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

Kathleen Clarke
Director

February 21, 2012

Richard Mingo
Utah Reclamation Mitigation & Conservation Commission
230 South 500 East
Suite 230
Salt Lake City, Utah 84102

Subject: PLPCO consulting party status for the Provo River Delta Restoration Project

Dear Mr. Mingo:

The Utah Governor's Public Lands Policy Coordination Office (PLPCO) coordinates the state's interests on public land issues and acts to ensure that state and local interests are considered in the management of public lands. As provided in Utah Annotated Code, PLPCO works to ensure that surveys and excavations of the state's archaeological and anthropological resources are undertaken in a coordinated, professional, and organized manner, through administration of the state archaeological survey and excavation permitting system (Utah Code Ann. § 9-8-305). PLPCO also conducts mediation (joint analysis) between the state historic preservation officer and other state agencies when parties do not agree with effects on historic properties (Utah Code Ann. § 9-8-404). Consistent with other statutory duties, PLPCO also encourages agencies to responsibly preserve archaeological resources (Utah Code Ann. § 63J-4-603[1][g]).

Given PLPCO's mission and responsibilities listed above, the agency would like to request consulting party status pursuant to 36 CFR § 800.2(c)(5) of the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470f), for the Provo River Delta Restoration Project. Should the Commission need additional information to consider PLPCO's suitability for consulting party status, please feel free to contact me.

Sincerely,

Dr. David T. Yoder
Public Lands Policy Coordination Office
5110 State Office Building
P.O. Box 141107
Salt Lake City, Utah 84114-1107
davidyoder@utah.gov
(801) 537-9014

Subject: FW: Tuesday Meetings

From: "Mingo, Richard G" <RMingo@usbr.gov>

Date: 2/28/2012 2:49 PM

To: Sarah Sutherland <Sarah@cuwcd.com>, "Baxter, Lee" <LBaxter@usbr.gov>, "Ken Sim" <ksim@bio-west.com>, "Darren Olsen" <darrenolsen@gmail.com>, Sean Keenan <skeenan@bio-west.com>, "Holden, Mark A" <MHolden@usbr.gov>

CC: "Mingo, Richard G" <RMingo@usbr.gov>

FYI – Following is the message from David Yoder with regs on Consulting Parties and their request to be a consulting party.

From: David Yoder [mailto:DavidYoder@utah.gov]

Sent: Tuesday, February 21, 2012 2:27 PM

To: Mingo, Richard G

Subject: Re: Tuesday Meetings

Richard,

I've attached the Section 106 regs. I highlighted some of the consulting party info that you may be interested in.

I think the only two groups who may want to be consulting parties are the ones we discussed at the meeting--Utah Professional Archaeological Council (UPAC) and the Utah Statewide Archaeological Survey (USAS). UPAC's president is Jim Allison (jallison@byu.edu), and he would be your primary contact for that organization (or at least the place to send info to begin with, after which he may delegate it to someone else on the executive committee). I believe USAS's current president is Bruce Burgess (bnbfamile@yahoo.com), but I'm not entirely sure (as they have often change in leadership). I would recommend contacting Bruce, but also contacting Ren Thomas (thomas2014_1@msn.com), as I believe he is in the leadership for the Provo Chapter of USAS, which is the chapter you would be working with.

I've also attached PLPCO's official request for consulting party status.

Thanks for organizing the meeting today; and feel free to contact me if you have any questions or if I can help.

David

David T. Yoder

Archaeologist

Governor's Public Lands Policy Coordination Office

davidyoder@utah.gov

801-537-9014 (Office)

>>> "Mingo, Richard G" <RMingo@usbr.gov> 2/17/2012 1:10 PM >>>

All – Attached is a rough agenda for our meetings on Tuesday. My apologies for making this so confusing, but we wanted to take advantage of the opportunity to meet with SHPO on both the PRDRP and the LDWP. In the morning will coordinate with SHPO on both projects. In the afternoon we will discuss construction implementation on LDWP for this upcoming spring/summer. You need only attend at the times as appropriate for you.

Agenda

Provo River Delta Restoration Project

Lower Duchesne River Wetlands Mitigation Project

Tuesday February 21, 2012

10:00 **Provo River Delta Restoration Project**

Background
Status
Section 106 Compliance

11:00 **Lower Duchesne River Wetlands Mitigation Project**

Background
Status
Section 106 Compliance

Noon **break for lunch**

1:00 **Lower Duchesne River Wetlands Mitigation Project**

2012 Construction Implementation Scheduling

Richard Mingo
Utah Reclamation Mitigation & Conservation Commission
230 South 500 East | Suite 230 | Salt Lake City | UT 84102
p. 801.524.3168 | c. 801.884.6130 | rmingo@usbr.gov

— Attachments: —

36 CFR Part 800.pdf	155 KB
PLPCO Consulting Party Status Request.docx	160 KB

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Dallin W. Jensen
James Karpowitz

March 22, 2012

Mr. David Yoder
Archeological Permitting Analyst
Public Lands Policy Coordination Office
5110 State Office Building
P.O. Box 141107
Salt Lake City, Utah 84114-1107

Subject: Provo River Delta Restoration Project, Utah County, Utah

Dear Mr. Yoder:

We received your letter dated February 21, 2012 requesting status as a consulting party pursuant to 36 CFR § 800.2(c)(5) of the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470f). We approve your request and will discuss with you further how to formalize this agreement. We have also invited the Utah Professional Archaeological Council (UPAC) and the Utah Statewide Archaeological Survey (USAS) to participate as consulting parties as you have suggested.

More information regarding the project can be found on the project's website at www.provoriverdelta.us.

Sincerely,



Michael C. Weland
Executive Director

cc: Lori Hunsaker, Utah Division of State History
James R. Allison, Brigham Young University
Bruce Burgess, Utah Statewide Archaeological Society
Ren Thomas, Utah Statewide Archaeological Society
Lee Baxter, DOI
Ms. Sarah Sutherland, CUWCD
Darren Olsen, Bio-West

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Dallin W. Jensen
James Karpowitz

March 26, 2012

Ms. Lori Hunsaker
Utah Division of State History
300 Rio Grande
Salt Lake City, UT 84101-1182

Subject: Provo River Delta Restoration Project, Utah County, Utah

Dear Ms. Hunsaker:

It was a pleasure to meet with you on February 21, 2012, to informally introduce and discuss the Provo River Delta Restoration Project (PRDRP). The PRDRP is needed to facilitate recovery of June sucker, a species endemic to Utah Lake, and listed as endangered pursuant to the Endangered Species Act. The proposed project would realign to lower portion of the Provo River and its interface with Utah Lake to restore the habitat necessary for juvenile June sucker to develop to an adult stage.

We are requesting to formally initiate our coordination and consultation responsibilities with your office pursuant to Section 106 of the National Historic Preservation Act. By copy of this letter, we are also inviting consulting parties to participate in the Section 106 process pursuant to 36 CFR § 800.2(c)(5) of the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470f).

If you wish to participate as a consulting party or have any other questions, please contact Richard Mingo at 524-3168.

Sincerely,



Michael C. Weland
Executive Director

cc: David Yoder, Public Lands Policy Coordination Office
James R. Allison, Brigham Young University
Bruce Burgess, Utah Statewide Archaeological Society
Ren Thomas, Utah Statewide Archaeological Society
Lee Baxter, DOI
Sarah Sutherland, CUWCD
Darren Olsen, Bio-West



Utah Statewide Archaeological Society Utah County Chapter

Richard Mingo
Utah Reclamation Mitigation
& Conservation Commission
230 South 500 East, Suite 230
Salt Lake City, UT 84102-2045

March 27, 2012

Dear Mr. Mingo:

The Utah Statewide Archaeological Society (USAS) is a nonprofit citizens group of volunteers that advocate for the protection, preservation and educational presentation of the State's archaeological resources for the public. We are closely affiliated with the Utah Division of State History and the Utah Professional Archaeological Counsel (UPAC). Thank you for this opportunity to express our concerns and be considered and contacted as a consulting party in regard to the cultural and archaeological resources involved in the area of the Provo River Delta Restoration Project.

The following is the contact information for contacting the Utah County Chapter of the Utah Statewide Archaeological Society (USAS). Thank You again for your consideration.

Ren Thomas
USAS, Utah County Chapter

USAS, Utah County Chapter c/o

Ren Thomas
449 South 100 East
Nephi, Utah 84648
(435) 623-2014 thomas2014_1@msn.com

Toni Wall
2105 E Powerhouse Rd.
Spanish Fork, UT 84660
(801) 798-2085 WallTK@aol.com

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Dallin W. Jensen

August 20, 2013

Mr. John McMullin
Utah County
2855 South State Street
Provo, UT 84606

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mr. McMullin:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland

Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

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Dallin W. Jensen

August 20, 2013

Mayor John Curtis
Provo City
351 West Center Street
Provo, UT 84601

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mayor Curtis:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

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On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District



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COMMISSIONERS
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Brad T. Barber
Dallin W. Jensen

August 20, 2013

Mr. Henry Maddux
Utah Dept. of Natural Resources
1594 West North Temple, Suite 3710
Salt Lake City, UT 84114-5610

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013


Dear Mr. Maddux:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP



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Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

August 20, 2013

Mr. Curtis Pledger
Area Manager
U.S. Bureau of Reclamation
302 East 1860 South
Provo, UT 84606-7317

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

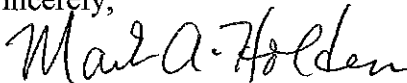
Dear Mr. Pledger:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP



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Don A. Christiansen
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Dallin W. Jensen

August 20, 2013

Mr. John McMullin
Utah County
2855 South State Street
Provo, UT 84606

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mr. McMullin:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Mark A. Holden

Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

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Dallin W. Jensen

August 20, 2013

Mr. Jason Gipson
Chief, Utah Regulatory Office
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mr. Gipson:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.



Sincerely,

A handwritten signature in black ink that reads "Michael C. Weland". The signature is written in a cursive, flowing style.

Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

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Dallin W. Jensen

August 20, 2013

Ms. Kristin Hartman Brownson, P.E.
Utah State Engineer
FAA Denver Airports District Office
26805 E. 68TH Ave., Suite 224
Denver, CO 80249

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

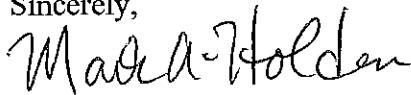
Dear Ms. Hartman Brownson:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

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On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director



cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

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Dallin W. Jensen

August 20, 2013

Ms. Janell Barrilleaux
Environmental Program Manager
Federal Aviation Administration
Northwest Mountain Region
1601 Lind Ave. SW, Suite 315
Renton, WA 98057-3356

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

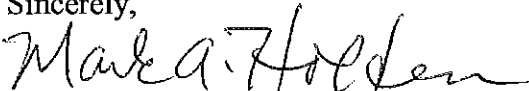
Dear Ms. Barrilleaux

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



ACTING
FOR Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

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Brad T. Barber
Dallin W. Jensen

August 20, 2013

Mr. Larry Crist
Field Supervisor
U.S. Fish & Wildlife Service
2369 West Orton Circle, Suite 50
West Valley City, UT 84119

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mr. Crist:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.



Sincerely,

Mark A. Holden

Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

August 20, 2013

Commissioner Gary Anderson, Chair
Utah County Commission
100 E Center Street, Suite 2300
Provo, Utah 84606

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mr. Anderson:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

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On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,


Michael C. Weland
Executive Director



cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP

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August 20, 2013

Mr. Dick Buehler
Utah Division of Forestry Fire and State Lands
1594 West North Temple, Suite 3710
Salt Lake City, Utah 84116

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

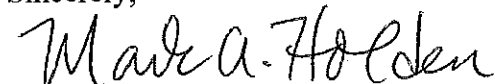
Dear Mr. Buehler:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

If there is a need by any of the Cooperating Agencies, we will make the meeting available via WebEx. If you have any questions or comments please contact Mr. Richard Mingo at 801/524-3168 or at rmingo@usbr.gov.

On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director

cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP



UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
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COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

August 20, 2013

Mr. Fred Hayes, Director
Utah Division of Parks and Recreation
1594 West North Temple, Suite 3710
Salt Lake City, Utah 84116

Subject: Cooperating Agency Meeting, Provo River Delta Restoration Project
Environmental Impact Statement; September 12, 2013

Dear Mr. Hayes:

We are writing to invite your attendance at a Cooperating Agency meeting sponsored by the three Joint-Lead Agencies preparing the environmental impact statement (EIS) for the proposed Provo River Delta Restoration Project. The three Joint Lead Agencies responsible for preparing the EIS and for making subsequent decisions regarding the proposed project are the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), the Department of the Interior – Central Utah Project Completion Act Office (Interior) and Central Utah Water Conservancy District (Central Utah). The main purposes for the meeting are to provide an update to the Cooperating Agencies, and to distribute the Cooperating Agency Internal Review Draft of the EIS. The meeting will be held on September 12, 2013 at 1:30 p.m. at Central Utah's office located at 355 West University Parkway, Orem, Utah.

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On behalf of the Joint-Lead Agencies, we appreciate your interest in the proposed Provo River Delta Restoration Project.

Sincerely,



Michael C. Weland
Executive Director



cc: Reed Murray, U.S. Department of the Interior
Gene Shawcroft, Central Utah Water Conservancy District
Michael Mills, Central Utah Water Conservancy District - JSRIP



Sean Keenan <skeenan@bio-west.com>

Preliminary Draft EIS Provo River Delta Restoration Project

Mingo, Richard <rmingo@usbr.gov>

Thu, Oct 31, 2013 at 9:30 AM

To: "cc: Darren Olsen" <dolsen@bio-west.com>, Lee Baxter <lbaxter@usbr.gov>, Mark Holden <MHOLDEN@usbr.gov>, Maureen Wilson <MWILSON@usbr.gov>, "mikem@cuwcd.com" <mikem@cuwcd.com>, Sarah Sutherland <Sarah@cuwcd.com>, Sean Keenan <skeenan@bio-west.com>, "Walter (Russ) Findlay" <wfindlay@usbr.gov>

Following are comments from Hilary she sent to me back on Sept 25, the day or two after we sent out the PDEIS.

—
Richard Mingo | Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230 | Salt Lake City, Utah 84102
p. 801.524.3168 | c. 801.884.6130 | rmingo@usbr.gov

----- Forwarded message -----

From: Hilary Arens <hilaryarens@utah.gov>
Date: Wed, Sep 25, 2013 at 8:16 AM
Subject: Re: Preliminary Draft EIS Provo River Delta Restoration Project
To: "Mingo, Richard" <rmingo@usbr.gov>

Hi there-

Thank you for including me in the Draft EIS comment period. My comments are mostly on water quality and included on the attached document in yellow highlights.

Please let me know if you have any questions.

Thanks

Hilary

[Quoted text hidden]

—
Hilary N. Arens
Utah Lake & Jordan River Basin Coordinator
Utah Division of Water Quality
195 North 1950 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870
801.536.4332
www.waterquality.utah.gov



Comments on Draft EIS for Provo River.Hilary Arens Division of Water Quality.docx
356K

Comments on Draft EIS for Provo River

From: Hilary Arens Utah Division of Water Quality

Executive Summary

Comments are highlighted in Yellow

Threatened and Endangered Species				
Determination of Effect on June Sucker	No effect	May affect, not likely to adversely affect (with net benefits to the species)	Same as Alternative A	Same as Alternative A

The statement that the action “may” affect June Suckers seems a bit vague. I’d like to think that if this project were to happen, then the general feeling would be that the project is “likely” to affect June Sucker population.

Table S-2. Existing Channel Design Features and Impact Assessment Summary

Features/Indicators	No Action	Option 1	Option 2
Flow range, cubic feet per second	0-1,800	10-50	10-50
Water quality	Recent measurements of dissolved oxygen are at times too low to support aquatic life	<p>Range of flows during the hot summer months during dry years would be improved with a minimum flow of 10 cfs</p> <p>Debris, suspended and bedload sediment, and pollutants associated with runoff events would be redirected into the new channel and delta.</p> <p>Limited opportunity to make improvements to the bed and banks that could improve water quality and recreation.</p>	<p>Range of flows during the hot summer months during dry years would be improved with a minimum flow of 10 cfs</p> <p>Debris, suspended and bedload sediment, and pollutants associated with runoff events would be redirected into the new channel and delta.</p> <p>Greater opportunity (with permanent dam structure) to make improvements to the bed and banks that could improve water quality and recreation.</p> <p>Cooler, deeper water would help improve dissolved oxygen concentrations.</p>

I am a curious why Option 1 would only allow for “limited opportunity” to make improvements to the bed and banks that could improve water quality and recreation, and why a permanent dam would make these kinds of projects more available. Secondly, while the dam would result in deeper water, I am not sure I am in agreement that it would result in cooler water and thus improve DO concentrations. On the contrary, I think it should be noted that the dam could create stagnant water, increase algal bloom conditions and possibly decrease DO concentrations.

Water Quality

Potential short-term water quality impacts associated with construction of stream channel and floodplain pond features would be mitigated through the use of appropriate stormwater and erosion control best management practices. Most construction activities in the project area would occur prior to diverting water into the delta and prior to removal of Skipper Bay dike.

Does this mean that stormwater retention basins would be created above the diversion area to store water in dry times? What are the plans for this?

Long-term Water Quality Enhancement for the Existing Channel

The existing lower Provo River channel and corridor in the project study area is used extensively by the local community for varied recreational and aesthetic activities. Poor water quality associated with low water levels have led to fish kills, odor problems, and unsightly experiences in the past, and are expected to become even more prevalent in the future as water rights purchased specifically for June sucker recovery are delivered to the new delta through the restored Provo River. The commitment by the JLAs to provide a minimum flow of 10 to 50 cfs to the existing channel is an enhancement over existing conditions, under which there is no

guaranteed or required minimum flow to be left in the lower Provo River channel under Utah state law or Federal mandate.

However, recent experience with summertime low flow conditions in 2012 and 2013 remind all of us that even with a commitment of 10 cfs flow to the existing channel, water temperature and especially dissolved oxygen levels will not likely meet state standards during the hottest summer months. Poor water quality may lead to die-offs of algae and fish, contributing offensive odors and temporarily causing overall undesirable conditions for this highly used recreational area. Therefore, the JLAs propose the following enhancement measures for consideration for water quality improvement in the existing lower Provo River channel if the PRDRP is implemented.

1. Recommend that State and local governments and organizations develop a task force/study group to investigate the causes of the poor water quality conditions in the lower Provo River/Utah Lake interface, and develop recommendations for solving the problem.
2. The JLAs will investigate the feasibility of and will implement, if deemed feasible, a pilot project to aerate lower Provo River minimum flows to increase dissolved oxygen levels with the objective of attaining at least water quality standards.
3. The JLAs will investigate the feasibility of and will implement, if deemed feasible, dredging or otherwise removing the organic-rich sediment layer from the bottom of the Provo River channel. This sediment layer is believed to have a very high Biological Oxygen Demand (BOD) that consumes oxygen from the water column, causing dissolved oxygen sags, especially during the nighttime hours when photosynthesis (oxygen-producing metabolic process of green algae and plants) does not occur to counteract the BOD. Option 2, with a permanent dam to control water elevation, would provide the best as well as ongoing opportunities to temporarily dewater the existing river channel for this and other purposes. With Option 1, a temporary dam might possibly be used for this purpose.

“Poor water quality associated with low water levels...” I think this statement is limiting the DO problem to ONLY low water levels, and not necessarily the other conditions that have also potentially influenced the DO problem. These could include, but are not limited to, accumulation of sediment in the stream bottom leading to high sediment oxygen demands, storm water influence, temperature increase due to loss of shading, and gradient and flow decreases in the area of concern.

Recommendation #1: while a study and recommendations for solving the problem is an adequate task to give a study group, the implementation of the proposed actions are the most important, and this recommendation does not set up the funding or gameplan for these kinds of studies or implementation of projects that may exacerbate the problem.

With recommendation 2 and 3, my issue isn't with the proposed project ideas, but the vagueness of the language of “investigate the feasibility”, which doesn't actually say that these projects will be implemented.

There is a good chance that I would be on one of these “task force/study groups” and I would want to insure that we were set up for real expectations and potential success for a thorough investigation of water quality issues and implementation of projects.



Utah County Commission

Gary J. Anderson
Larry A. Ellertson
Doug Witney

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801-851-8133
801-851-8136

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Provo, Utah 84606

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UCADM.UTAHCNTY@STATE.UT.US

October 30, 2013

Richard Mingo
Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230
Salt Lake City, Utah 84102

Dear Richard,

1. The potential for creating an environment that would further the mosquito population in close proximity to a large residential area and the regulations that forbid the spraying and control of the mosquitos.
2. Diversion of the Provo River and its intended and/or unintended disruption of sport fishing and scout activities.
3. The impact on private property owners and agricultural impact. We strongly support the use of existing canals and waterways to provide the proper environment for the June Sucker. It will reduce the loss of prime agricultural ground.
4. The loss of control over a major river in Utah County. Provo River has a historical significance for Utah County and the State of Utah as a whole.
5. Eventual government regulations and control of water on both Springville and Provo rivers. Not only are we having water dedicated to the June Sucker, but the water ways of Hobble Creek and Provo River are now being scrutinized much more than before. Is this a personal land rights issue?

Sincerely,

Doug Witney (Chair)
Utah County Commission

Matt Howard, Impact Biologist, Utah Division of Wildlife Resources Central Region

UDWR supports the proposed habitat enhancement project for Provo River to improve conditions for the endangered June sucker. The project would restore some of the historic complexity of the Provo River-Utah Lake interface, improve June sucker spawning opportunity, and improve the whole stream and lake ecosystem. We find that any of the three proposed action alternatives would be acceptable, as all action alternatives would have a positive impact on the June sucker and the natural environment and meet the goals outlined in the project's purpose and need.

UDWR recommends Option 2 for the increased flexibility that it provides for management of the fishery and for June sucker reproductive success. If the existing channel is left unobstructed, as outlined in Option 1, June suckers would continue to spawn unsuccessfully in the impacted channel.

UDWR does have some concerns considering the project. Of particular interest are land ownership, monitoring, and ecosystem resilience over the long term. As the JSRIP is not a land management entity, we worry that the land would eventually be turned over to land management organizations in an incomplete state that would result in inherited challenges for managers. We recommend that success criteria be defined in the document.

These success goals apply most to long-term management of weeds in the proposed restored delta. Appendix A of the document states that "The plant community surveys will be conducted in August of each year," but does not say at what point these monitoring surveys would be concluded, if ever. It is recommended that a series of completion goals be outlined, and that a commitment to monitoring and adaptive management strategies would continue at least until these thresholds are met.

Matt Howard, Habitat Biologist
Utah Division of Wildlife Resources, Central Region
[385-985-7526](tel:385-985-7526) (cell)
[801-491-5653](tel:801-491-5653) (office)
[801-491-5646](tel:801-491-5646) (fax)
matthoward@utah.gov

David Lee, Central Utah Project Leader, Utah Division of Wildlife Resources

I've based my comments on two main considerations. The first category is based on the ecology and biological requirements of the June Sucker and the Provo River System and considers the success of past and current management actions implemented on behalf of the June Sucker recovery program. Socio-political considerations and the dependence of the program federal funding, make up the second set of considerations. Comments are based on my knowledge of the Utah Lake ecosystem, review of the documents provided, and my familiarity with the issues in the local community.

Ecological considerations

The status of the June Sucker is closely tied to the hydrology of Utah Lake and the continued management efforts of the cooperating agencies. The biology of this species creates a variety of issues that complicates management efforts to ensure its survival. Lake levels are maintained more like an irrigation reservoir than the natural lake that Utah Lake used to be prior to European settlement. This has resulted in the loss of most of the permanent wetlands around the lake margin, which now emerge as mudflats when lake levels recede. June suckers need in-stream flows for spawning and recruitment at the same time that the demand for in-stream diversions associated with historic water rights pick up in early summer. Stream channelization projects, irrigation diversions, nutrient laden return-flow irrigation, and the introduction of a variety of predatory species into the Utah Lake Ecosystem are all problematic to the survival of larval June suckers. In spite of these issues, recent actions on the part of the cooperating agencies are improving the outlook for the continued survival of the species. Addition of in-stream flows, population monitoring, habitat restoration, and attempts to remove competition from some of the non-native species are all part of the successful restoration efforts of the June Sucker. Monitoring efforts associated with the Hobble Creek restoration project have demonstrated the potential for success that exists through restoration of historical spawning and recruitment areas. Moving forward with the implementation of the Lower Provo River Delta Restoration Project will increase survival and recruitment of June Sucker, providing the water requirements can be met. The proposed land acquisitions should provide some of the water necessary for the project to function properly. When the Utah Lake System of the Central Utah Project is complete, the ability to deliver project water to support the hydrologic requirements of the project, while maintaining the existing river channel should also become feasible.

Socio-political considerations

Land ownership within the proposed project area is primarily private, but the project area is adjacent to Utah Lake State park, a significant public recreation site. Project implementation will compliment these opportunities, and provide significant education opportunities in the future. Private land acquisitions will likely amount to a large percentage of the project costs. Private land acquisition also disrupts the local community. Selection of the alternative that achieves the best chance of success, with the least amount of disruption of existing conditions will result in broader acceptance within the local community. Funding for this program is based nearly, if not entirely, on federal funding. Federal funding should not be considered guaranteed. Fiscal responsibility should also figure prominently into the considerations of which alternative should be labeled most preferred. Fiscal considerations include the costs of land and water acquisitions, construction, and long-term maintenance. Management responsibility is another consideration not clearly spelled out in the document. At this point, the care-takers have not been identified. The selection of a preferred alternative could be simplified when we know who the long-term custodian of the project will be.

Preferred alternative

It is clear to me that Alternative B is the preferred alternative. It complies with the stated goal of preserving the recreational use of the historic channel, which generates broad public support among the local community. Alternative B requires no wetland fill, requires the least amount of private land acquisition, birm removal, and birm construction, while providing the widest floodplain, modest amounts of riparian and wetland habitat creation. Alternative B provides good potential increases for public recreation due to the amount of wetland and riparian habitats created. With most of the remaining consideration being nearly equal, and Alternative B providing a similar likelihood for project success, Alternative B appears to be the most attractive from a biological and social perspective.

In an ideal situation, without any constraints, we would push for the maximum amount of habitat creation with no regard to the cost of acquisition, construction, or long-term maintenance of the project. However, due to the dependence of the project on external funding, proximity to urban areas, surrounding land uses, and historic use of the area for recreation and agricultural, social acceptability is a valid criteria. Option B addresses the biological requirements for the project, and brings support of the local community, which will facilitate better acceptance after the project is complete.

David Lee
Central Utah Project Leader
Utah Division of Wildlife Resources
Telephone: [801 243-4103](tel:8012434103)
email: davidlee@utah.gov

Henry Maddux, Utah Recovery Programs, Department of Natural Resources

We are very supportive of the project and it's essential to the recovery of endangered June sucker.

We support the preferred alternative. The EIS should ensure that if properties become available in the future the Delta project could be expanded without further NEPA review.

Henry Maddux
Utah Recovery Programs
Department of Natural Resources
Telephone: 801 538-7420
email: hmaddux@utah.gov

Susan Zarekarizi, Lands/Environmental Coordinator, Department of Natural Resources

Utah State Parks and Recreation (State Parks) appreciates the opportunity to comment on the Draft Provo River Delta Restoration Project EIS. We would like to offer the following observations and concerns.

Out of the three alternatives proposed for the realignment of the lower Provo River and delta development area, State Parks agrees with and supports the preferred alternative (Alternative B). Alternative B seems to best meet the goals for the June Sucker recovery efforts while lessening the impacts to the surrounding private/public land owners and managers.

To improve visitor access and recreational use of the new river/delta area, State Parks would like to recommend the plan include developed access areas including launch ramps. Developing hardened access sites will improve safety, law enforcement, invasive species management and recreation opportunities associated with this new area. However, if there is not a managing entity for these locations we are concerned that the new access points will quickly degrade and may negatively impact Utah Lake State Parks law enforcement team. We have a limited budget and need funding for the increased public safety and invasive species management that may be necessary at these new sites.

State Parks supports the plan's retention of the existing lower Provo River channel. Either option will positively impact recreational use of the area. However, State Parks would prefer Option 2. We feel the construction of a small dam to facilitate higher water levels will provide better recreation opportunities for the public. We are concerned that the proposed level of flow (10 cfs) might cause this impounded waterway to become stagnate and unattractive to users. We support suggestions for oxygenation of the impounded water and would like to request the team look at increasing flows periodically to keep the water from becoming stagnate. With respect to Option 2 we are concerned about challenges with portage from Utah Lake to the impounded river channel. We would prefer individuals to be able to safely move their craft from the lake to the river and would like this to be included as a major consideration in determining dam placement. A possible solution to safer portage might be moving the small dam as far west as possible, as long as it does not interfere with our water right. We would also like to have input on the design of the dam and its outflow structure. State Parks would like to ensure the small dam and outflow does not wash out our levees on the river's north bank or the public access and launch site on the river's south bank.

Please contact me if you have any questions or concerns about our comments.

Susan Zarekarizi
Utah State Parks and Recreation
Lands/Environmental Coordinator
Phone: [801-538-7496](tel:801-538-7496)
Fax: [801-538-7378](tel:801-538-7378)
susanzarekarizi@utah.gov



U.S. Department
of Transportation
**Federal Aviation
Administration**

Airports Division
Northwest Mountain Region
1601 Lind Avenue, S. W., Suite 350
Renton, Washington 98055-4056

October 31, 2013

Mr. Richard Mingo
Utah Reclamation Mitigation & Conservation Commission
230 South 500 East
Suite 230
Salt Lake City, UT 84102

via e-mail at rmingo@usbr.gov

Dear Mr. Mingo,

The U.S. Federal Aviation Administration (FAA) is a cooperating agency for the Environmental Impact Statement (EIS) development process for the proposed Provo River Delta Restoration project in Provo, Utah, which is adjacent Provo Airport (Airport). The FAA's specific role as a cooperating agency is to provide input and expertise regarding the interaction between wildlife conservation efforts and aviation operations. The Airport provides both commercial and general aviation services and is located on the west edge of the city of Provo, adjacent to Utah Lake and Provo Bay. The Airport has two runways – runway 13/31 which is 8,600 feet long and runway 18/36 which is 6,602 feet long. The Airport is fairly active with 172,014 total operations at the Airport in 2012. The Airport has 104 based aircraft and seven based helicopters.

The intent of this letter is to advise you that we believe that the Draft Environmental Impact Statement (DEIS) does not adequately capture the potential impacts of the proposed project as it relates to aviation wildlife hazards nor does it provide sufficient mitigation for the impacts identified. Based on the information provided, we found that the proposed project would have a negative effect on the Airport. Bird strikes and aviation wildlife hazards are a high priority with the FAA. The areas more susceptible to wildlife strikes are the arrival/departure surface and the aircraft operating area (AOA).

The FAA submits the following comments for your consideration and action:

- The DEIS acknowledges that the overall abundance of birds is predicted to increase substantially in the fall and summer. We have serious concerns about how this increase will increase risks to aviation during these times, especially in the fall when the airport is at its busiest. Included in the predicted increased population are cormorants/pelicans, geese, ducks, gulls, and blackbirds, all of which are large birds that are hazardous to aircraft. Even though impacts have been identified, the DEIS does not offer any substantial mitigation measures to address the increased bird strike wildlife risk. The DEIS should include mitigation for the impacts identified either through changes in design

and/or operational/management controls to reduce the risks to aviation. The FAA encourages you to work with the Airport sponsor and the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Wildlife Biologists in developing potential mitigation strategies.

- The completed study only considered the potential abundance of birds and did not consider bird movement. Bird movement is a crucial component in determining the wildlife strike risk. Birds will frequently move between habitats and this movement could occur in critical areas for the Airport at altitudes dangerous for aircraft. The Bird-Aircraft Strike Assessment should be revised to include bird movements in the analysis to determine the full potential impact to aviation.
- The DEIS refers to a technical memorandum that provides the results of the modeling activities. However, this technical memorandum was not included with the DEIS. In addition, the Existing Bird Communities and Bird-Aircraft Strike Assessment were not included. The FAA would like to review both of these documents to determine if they adequately evaluated the potential risk of the proposed project to the Airport.
- The DEIS is silent on existence of the Airport throughout the document, except for Section 3.16 (Public Health and Safety). Please make it clear on how the findings consider the Airport in the analysis throughout the document (where appropriate).
- The DEIS did not consider the impacts that could occur during construction of the restored delta and during the initial development of the delta. Please add this information.
- It is not clear if the construction will require the use of cranes or other sizeable construction equipment. Please note that the project may require the completion of an Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) to determine if the project will have any impact on the airspace during construction. In addition, we strongly encourage you to coordinate with the Airport and the Air Traffic Control Tower during construction to determine if any of the construction activities will impact the Airport.

In summary, FAA respectfully requests the following information be provided in the Bird-Aircraft Strike Assessment and DEIS to help us better assess the potential impact of the proposed project:

- How aircraft use the airport – such as how do aircraft approach the airport, do they circle or come straight in, how is each runway used, etc.
- How birds currently move through the project area and airport environs and how this movement might change with the proposed project?
- Will the wildlife population evolve as the new habitat becomes established?
- Does the Airport have any plans for runway extensions or other improvements that could be impacted by the proposed project?
- What steps will be taken during the fall and summer months to limit the risk of a bird strike?
- What are the project proponents willing to do if the project creates a wildlife hazard for the Airport that cannot be mitigated?

The FAA can help provide some of this relevant material, if needed. However, based upon our review of the DEIS, the FAA is unable to support the proposed project given the predicted increase in wildlife and potential to create wildlife hazards for the airport. We cannot ignore the potential effect the proposed project could have on the safety of aircraft.

Thank you for the opportunity to review the DEIS. If you have any questions or comments, please feel free to contact Ms. Janell Barrilleaux at 425-227-2611.

Sincerely,


Sarah Dalton
ANM Airports Division Manager

cc: John Weller
John Bauer
Janell Barrilleaux
Patricia Deem

Provo River Delta Restoration Project

Environmental Impact Statement

Cooperating Agency Review Draft

Provo City Review - November 1st, 2013

Proposed Action and Preferred Alternative (Page 1) - The need for the Proposed action appears to be overstated, if not misrepresented, in describing it as necessary to restore “habitat conditions for spawning, hatching, larval transport, survival, rearing, and recruitment of June sucker”. It does appear that need is well established for survival, rearing and recruitment. However, it appears equally clear that existing conditions are adequate for spawning, hatching and larval transport. Overselling the project need will have impacts on the credibility, perceived integrity and public response regarding this document and the overall Project.

New and Enhanced Public Recreation Opportunities (Page 4) - The statement, a berm would be constructed that will “prevent lake inundation” onto contiguous agricultural lands, is another example of an overstatement that could weaken the credibility of other statements in the document, which are not as easily understood by stakeholders or the general public. Concerns with the nature of this berm will be discussed in greater detail subsequently.

Along this line, suggestions that the Project will provide access for activities such as “canoeing, fishing and waterfowl hunting” should be tempered, unless the JLAs are reasonably confident that those activities will actually be made available.

It is not at all clear how the diversion of most of the historical water flows to the relocated river channel, would not result in any impacts to riparian vegetation along the abandoned river channel.

Accommodation of Provo City Planning Transportation Planning (Page 5) - A number of very complicated challenges exist near the proposed river diversion location, associated with the sequencing of Project construction; while simultaneously accommodating local transportation needs, flood control requirements and environmental objectives. These challenges should be acknowledged, and potential methods for addressing them should be identified.

Hydrology and Flood Risk (Page 15) - Understanding the changes in potential lake and river flooding conditions is critical to Provo City and affected property owners. A key overall question is: if the entire river channel and function is going to be completely relocated, why are the flood control levees along the south bank (which are an integral element of the river channel) not also being relocated with the rest of the river channel? It has been suggested that the since the character of the flood plain on specific local properties is not affected, moving the levees with the rest of the river channel is not necessary. While this may be true, that argument ignores the practical and operational concerns associated with this Project impact of leaving the existing flood control levee a half-mile away from the relocated channel.

The most significant of these impacts is that existing river levee would become more of a lake levee; with different, and more significant wave action considerations. Additionally, from an operational standpoint, the existing configuration allows for monitoring, “testing”, and effective maintenance work to occur during less-than-design-level events. An impact of the Project would be that the only time the existing levee would be operational, would be during a nearly 100-year event; with little time to prepare, or to respond.

If these Project impacts could be adequately mitigated without relocating the existing levee, concerns would still exist with the south bank of the river in the area of the river diversion. A berm elevation of 4495' would certainly not be adequate through this transition section.

The noted existing river flood elevation, below the lake flood elevation (Table S-1), seems inaccurately low.

Aircraft-bird strike risk (page18) - Comments on this significant area of concern will await the pending impact assessment. Initially, it would appear that an increase of hundreds of acres of open water will result in a related increase in bird activity, along with the associated increase in an aircraft-bird strike risk. Effective mitigation measures for this risk are unclear.

Long-term Water Quality Enhancement for the Existing Channel (page 24) - The long term nature and condition of the abandoned section of river channel is very important to Provo City and its citizens. The desire is that it be an aesthetic and recreational asset, and not something that becomes a liability. The current draft of the EIS does not provide adequate assurance that the desired objective will be achieved.

A commitment is made that a minimum flow of 10 to 50 cfs will be provided to the abandoned channel section. It is stated that this is an enhancement over existing conditions, under which there is no guaranteed minimum flow. While that statement is technically accurate, it is also quite misleading. The practical effect of that commitment is that through the critical summer period, the abandoned river channel will have 10 cfs of flow, and rarely much more. Historically, the periods of time when there has been less 10 cfs of flow in the lower Provo River have been fewer and shorter, than when there has been more than 10 cfs.

It is unclear how this commitment will result in any water quality enhancement for the existing channel. The draft EIS document recognizes that dissolved oxygen levels will likely not meet state standards, resulting in undesirable aesthetic impacts. Under existing conditions, periodic summer rain storms generate flows in the river that help sustain riparian vegetation. A Project impact would be to divert at least 90% of those flows to the new delta.

The JLA proposal appears to be that a State and local government task force be formed to come up with solutions to the problem. The extent of the JLAs commitment appears limited to investigating the feasibility of a couple of options for possible implementation. If determined to be unfeasible, the local community could be left with a situation that is much worse than the existing condition from water quality, aesthetic and recreational standpoints. A greater level of commitment from the JLAs to see that this is not a long term impact of the Project would be desirable.



Utah Statewide Archaeological Society

Mr. Richard G. Mingo
Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230
Salt Lake City, Utah 84102
rmingo@usbr.gov

14 January, 2014

Richard,

The purpose of this letter is to inform the parties involved in the Provo River Delta Restoration Project that the Utah Statewide Archaeological society (USAS) is interested in participating as a consulting party to the project. Further USAS concurs with the intent of the Joint Lead Agencies and the Utah Reclamation Mitigation and Conservation Commission to develop a Memorandum of Agreement outlining obligations and commitments in regards to the cultural heritage and resources of the project area prior to any ground disturbing activities.

Thank you and please keep USAS apprised of the projects progress.

Ren Thomas
President, Utah Statewide Archaeological Society
Thomas2014_1@msn.com

Cc: Ms. Lori Hunsaker
Utah Division of State History
300 Rio Grande
Salt Lake City, Utah 84101-1182

Mr. David Yoder
Archaeological Permitting Analyst
Public Lands Policy Coordination Office
5110 State Office Building, P.O. Box 141107
Salt Lake City, Utah 84114-1107

Dr. James R. Allison
Assistant Professor
Department of Anthropology 800 SWKT
Brigham Young University
Provo, Utah 84602



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Julie Fisher
Executive Director
Department of
Heritage & Arts



Brad Westwood
Director

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ME02	MM
ME05	RM

January 30, 2014

Michael C. Weland, Executive Director
Utah Reclamation Mitigation and
Conservation Commission
230 South 500 East, Suite 230
Salt Lake City, UT 84102-2045

RE: Provo River Delta Restoration Project, Utah County, Utah

For future correspondence, please reference Case No. 12-0625

Dear Mr. Weland:

The Utah State Historic Preservation Office received your request for our comment on the above-referenced undertaking on January 14, 2014. The UTSHPO does not believe it is necessary for the Mitigation and Conservation Commission to create an MOA to handle the monitoring for cultural resources during the proposed undertaking's implementation. As there is no determination of adverse effects, an MOA is not appropriate. MOAs are used to resolve adverse effects; and where no historic properties were identified in the APE, there is no determination of adverse effects in this case. Instead, the Commission can simply state that they will adhere to the recommendations described by their contractor, Logan Simpson Design, for this project implementation. In addition, if the Commission feels it is appropriate to develop a formal monitoring plan, as described in LSD's recommendation, then UTSHPO will be happy to review the document. If you would like further clarification on this discussion please feel free to contact us at your convenience.

This letter serves as our comment within the consultation process specified in §36CFR800.4. If you have questions, please contact me at 801-245-7263 or Lori Hunsaker at 801-245-7241 lhunsaker@utah.gov.

Sincerely,

Chris Merritt, Ph.D.
Senior Preservation Specialist
cmerritt@utah.gov



Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

March 6, 2014

Lori Bear Skiby
Skull Valley Band of Goshute Indians
P.O. Box 448
Grantsville, Utah 84029

Subject: Provo River Delta Restoration Project Draft Environmental Impact Statement

Dear Chairman Skiby:

The Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies, have issued a Draft Environmental Impact Statement for the Provo River Delta Restoration Project for public review and comment. In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking. The JLA's made this initial offer to you by letter dated May 16, 2011 when a Notice of Intent to prepare an Environmental Impacts statement was issued. Enclosed is a copy of the Draft EIS on CD for your review. Volume I of the Draft EIS contains an Executive Summary of the project.

Each spring in the lower Provo River, adult June sucker (*Chasmistes liorus*) are observed spawning, and significant numbers of recently hatched larvae are subsequently monitored drifting downstream. But post-larval survival rates of the June sucker have been found to be low to zero since the species was listed as endangered in 1986 (and before). Monitoring efforts have not documented the successful recruitment of wild June sucker from Provo River and research has shown that larval fish generally do not survive longer than about 20 days after hatching. It is believed that the larval fish die because of a lack of suitable "nursery" or rearing habitat and are therefore unable to recruit to the adult population. The Provo River Delta Restoration Project is needed to facilitate recovery of June sucker by implementing requirements of the June Sucker Recovery Plan to restore naturally functioning habitat conditions in the Provo River/Utah Lake interface that are essential for spawning, hatching, larval transport, survival, rearing and recruitment of June sucker. Under all action alternatives, the Provo River would be relocated from its present location into the adjacent Skipper Bay area to restore the nursery habitat that is currently lacking.

A public meeting will be held Wednesday, April 2, 2014 from 6:00 to 8:00 p.m. at Provo City Recreation Center, 320 West 500 North, Provo, Utah. The purpose of the public meeting is to provide the public and other interested parties the opportunity to ask questions and provide comment to the Joint Lead Agencies. The format of the meeting will be an open-house type format. Written comments on the Draft EIS should be received no later than May 7, 2014 to ensure inclusion in the administrative record.

In addition to the Joint Lead Agency responsibilities under Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers has designated the Mitigation Commission as the

lead Federal agency with regard to consultation required under Section 106 as it relates to compliance with Section 404 of the Clean Water Act. If you wish to consult with the Joint Lead Agencies please contact Richard Mingo at (801) 524-3168. Additional information regarding the project can be found on the project website www.ProvoRiverDelta.us.

Sincerely,



Michael C. Weland
Executive Director

cc:

Ms. Lori Hunsaker
Utah Division of State History
300 Rio Grande
Salt Lake City, UT 84101-1182

Jason Gipson, Chief Utah/Nevada Regulatory Branch
U.S. Army Corps of Engineers, Sacramento District
Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, UT 84010

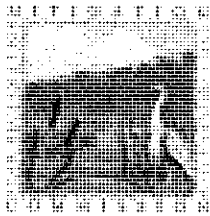
Mr. David Yoder
Archeological Permitting Analyst
Public Lands Policy Coordination Office
5110 State Office Building
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James R. Allison
Assistant Professor
Department of Anthropology 800 SWKT
Brigham Young University
Provo, Utah 84602

Mr. Bruce Burgess, President
Utah Statewide Archaeological Society
bnbfamile@yahoo.com

Mr. Ren Thomas
Utah Statewide Archaeological Society
thomas2014_1@msn.com

Mr. Reed Murray, DOI
Ms. Sarah Sutherland, CUWCD
Darren Olsen, Bio-West



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COMMISSIONERS
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Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

March 6, 2014

Jason S Walker
Northwestern Band of Shoshone Nation
707 North Main Street
Brigham City, Utah 84302

Subject: Provo River Delta Restoration Project Draft Environmental Impact Statement

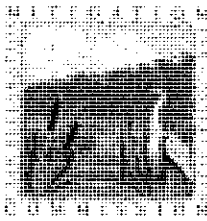
Dear Chairman Walker:

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COMMISSIONERS
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Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

March 6, 2014

Gordon Howell
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026-0190

Subject: Provo River Delta Restoration Project Draft Environmental Impact Statement

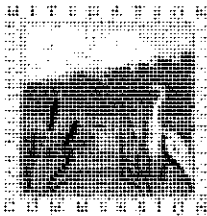
Dear Chairman Howell:

The Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies, have issued a Draft Environmental Impact Statement for the Provo River Delta Restoration Project for public review and comment. In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking. The JLA's made this initial offer to you by letter dated May 16, 2011 when a Notice of Intent to prepare an Environmental Impacts statement was issued. Enclosed is a copy of the Draft EIS on CD for your review. Volume I of the Draft EIS contains an Executive Summary of the project.

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COMMISSIONERS
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Dallin W. Jensen

March 6, 2014

Ed Naranjo
Goshute Indian Tribe
P.O. Box 6104
Ibapah, Utah 84034

Subject: Provo River Delta Restoration Project Draft Environmental Impact Statement

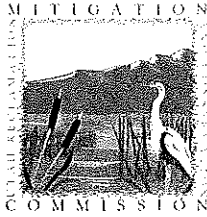
Dear Chairman Naranjo:

The Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies, have issued a Draft Environmental Impact Statement for the Provo River Delta Restoration Project for public review and comment. In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to participate in consultations regarding religious or culturally significant properties that may be affected by this undertaking. The JLA's made this initial offer to you by letter dated May 16, 2011 when a Notice of Intent to prepare an Environmental Impacts statement was issued. Enclosed is a copy of the Draft EIS on CD for your review. Volume I of the Draft EIS contains an Executive Summary of the project.

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COMMISSIONERS
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July 23, 2014

Ed Naranjo, Chairman
Goshute Indian Tribe
P.O. Box 6104
Ibapah, Utah 84034

Subject: Provo River Delta Restoration Project Consultation

Dear Chairman Naranjo:

The Department of the Interior Central Utah Project Completion Act Office, the Utah Reclamation Mitigation and Conservation Commission and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies, issued a Draft Environmental Impact Statement for the Provo River Delta Restoration Project. In accordance with §800.2(a)(4) of the National Historic Preservation Act we are inviting you to consult with the Joint Lead Agencies regarding religious or culturally significant properties that may be affected by this undertaking. We have previously invited you to consult with the Joint Lead Agencies by letters dated March 6, 2014 and May 16, 2011.

Enclosed is a copy of a cultural resource survey report conducted over the Area of Potential Effect. Although no eligible sites were identified during the survey, the report concluded that,

"it is probable that NRHP-eligible buried prehistoric sites are located within the Provo River Delta Restoration project area. Prehistoric residential sites can be large, and considering the project areas proximity to previously documented sites of this type, there is a high probability that one or more of these sites will be inadvertently discovered during ground disturbing activities associated with the re-establishment of the Provo River delta."

Mr. Richard Mingo of my staff will be contacting you by phone within the next few weeks to see if you wish to consult with the Joint Lead Agencies in person regarding any potentially culturally significant properties that may be impacted by the proposed project.

Project Background

Each spring in the lower Provo River, adult June sucker (*Chasmistes liorus*) are observed spawning, and significant numbers of recently hatched larvae are subsequently monitored

drifting downstream. But post-larval survival rates of the June sucker have been found to be low to zero since the species was listed as endangered in 1986 (and before). Monitoring efforts have not documented the successful recruitment of wild June sucker from Provo River and research has shown that larval fish generally do not survive longer than about 20 days after hatching. It is believed that the larval fish die because of a lack of suitable "nursery" or rearing habitat and are therefore unable to recruit to the adult population. The Provo River Delta Restoration Project would restore the "nursery" by re-establishing the connection of the Provo River to a portion of its historic floodplain. Maps and additional information regarding the project can be found on the project website www.ProvoRiverDelta.us.

If you have any questions or wish to consult with the Joint Lead Agencies please contact Richard Mingo at (801) 524-3168.

Sincerely,



Michael C. Weland
Executive Director

Enclosure

cc:

Ms. Lori Hunsaker
Utah Division of State History
300 Rio Grande
Salt Lake City, UT 84101-1182

Jason Gipson, Chief Utah/Nevada Regulatory Branch
U.S. Army Corps of Engineers, Sacramento District
Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, UT 84010

Mr. David Yoder
Archeological Permitting Analyst
Public Lands Policy Coordination Office
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James R. Allison
Assistant Professor
Department of Anthropology 800 SWKT
Brigham Young University
Provo, Utah 84602

Mr. Bruce Burgess, President
Utah Statewide Archaeological Society
bnbfamile@yahoo.com

Mr. Ren Thomas
Utah Statewide Archaeological Society
thomas2014_1@msn.com

Mr. Reed Murray, DOI
Ms. Sarah Sutherland, CUWCD
Darren Olsen, Bio-West

Copies also sent to:

Ed Naranjo, Chairman Goshute Indian Tribe

Jason S. Walker, Chairman Northwestern Band of Shoshone Nation

Lori Bear Skiby, Chairwoman Skull Valley Band of Goshute Indians

Gordon Howell, Chairman Ute Indian Tribe

Kurt Dongoske, RPA, Director/Tribe Zuni Pueblo

Leigh J. Kuwanwisiwina, Director Hopi Tribe



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Herman G. Honanie
 CHAIRMAN
 Alfred Lomahquahu Jr.
 VICE-CHAIRMAN

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MC05	

August 4, 2014

Michael C. Weland, Executive Director
 Utah Reclamation Mitigation & Conservation Commission
 230 South 500 East Suite 230
 Salt Lake City, Utah 84102-2045

Re: Provo River Delta Restoration Project

Dear Mr. Weland,

Thank you for your correspondence dated July 23, 2014, with enclosed cultural resources survey reports regarding the Provo River Delta Restoration Project. The Hopi Tribe claims cultural affiliation to earlier identifiable cultural groups in Utah. The Hopi Cultural Preservation Office supports the identification and avoidance of our ancestral sites and Traditional Cultural Properties, and we consider the archaeological sites of our ancestors to be "footprints" and Traditional Cultural Properties. Therefore, we appreciate the Utah Reclamation Mitigation & Conservation Commission's solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office has reviewed the enclosed cultural resources survey reports and we understand that it is probable that National Register eligible prehistoric sites will be inadvertently discovered during ground disturbing activities associated with the re-establishment of the Provo River delta.

Therefore, we look forward to continuing consultation on this proposal including being provided with copies of the monitoring and or testing plans and reports for review and comment. Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office at 928-734-3619 or tmorgart@hopi.nsn.us. Thank you again for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
 Hopi Cultural Preservation Office

xc: Utah State Historic Preservation Office

PROVO RIVER DELTA RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix F: Draft EIS Comments and Responses

APPENDIX F: DRAFT EIS COMMENTS AND RESPONSES

The Draft EIS comment period extended from the publication of the Notice of Availability in the Federal Register on February 28, 2014, through May 7, 2014. Twenty-nine total comment letters/comment forms were received.

Hand-written comments were transcribed before drafting responses. Personal contact information of commenters was blacked-out, unless it was submitted on agency/organization letterhead. Original copies of all letters and comment forms were retained by the Utah Reclamation Mitigation and Conservation Commission as part of the project administrative record.

List of commenters by comment letter number (ordered by date submitted):

- 1 – Bob Warner
- 2 – Utah County Commissioner, Doug Witney
- 3 – Utah County Commissioner, Larry Ellertson
- 4 – Carolyn Seale
- 5 – Amy Spong
- 6 – Mike Spong
- 7 – Marisa Robins Nielsen
- 8 – Charmaine Thompson
- 9 – Rachel Whipple (personal comment)
- 10 – Rachel Whipple (Provo Bike Committee)
- 11 – Susan Malone
- 12 – Elissa Van Marter
- 13 – David and Melita Hill
- 14 – Steve Gleason, Provo Airport
- 15 – Mario D. Markides, Utah Valley University, Aviation Sciences
- 16 – Ben Markham
- 17 – Ren Thomas, Utah Statewide Archaeological Society
- 18 – James Graff
- 19 – Timp-Nebo Conservation District
- 20 – Alpine Conservation District
- 21 – Scott Phillips
- 22 – Sarah Dalton, Federal Aviation Administration
- 23 – M. Moreno Robins and LaDonn Robins Christianson
- 24 – Philip Strobel, U.S. Environmental Protection Agency
- 25 – Kathleen Clarke, State of Utah
- 26 – Russell Hopkinson, Utah Valley University, Aviation Sciences
- 27 – Mayor John Curtis and Provo City
- 28 – Rebecca Lorig, U.S. Fish and Wildlife Service
- 29 – Jason Gipson, U.S. Army Corps of Engineers

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Content Analysis/Topic Outline

(numbers in parentheses refer to comment letter numbers on page 1)

Impact assessment topics/issues

- Mosquito abatement concerns (2, 5, 6, 11, 12, 27)
- Bird-aircraft strike hazard (14, 15, 16, 22, 26, 27)
- Adequacy of cultural resources impact assessment; need for MOA (8, 17)
- Economic impact on property owners, business owners, agricultural impact (2, 5, 6, 12)
- Existing levee/flood risk - Provo City concern (27)
- EPA: source analysis for oxygen demand (24)
- EPA: want to see channel excavation footprints for 404 permitting (24)
- EPA: need a water quality analysis for wetlands (24)

Recreation/trails

- Accommodating horses on trails (4, 11, 12)
- Separation of pedestrian walkways and bike trails (10)
- Minimize interruption of trail use during construction (10)
- Trails should provide wildlife viewing opportunities (18)
- Recreation design issues - some Provo City ideas and concerns (27)

Existing channel

- Want to see a fish ladder for Option 2 lower dam (16)
- UDWR and FWS: concern about JS using old channel or entrapment of larvae (25, 28)
- EPA and Provo City: Effect of not having high flow events in existing channel (22, 27)
- EPA: additional analysis and management solutions for DO problem (24)

Corps of Engineers

- Applicability of NW27 and concern for peat bogs/fens (29)
- Effect of not completely removing Skipper Bay dike on fish access (29)
- Effects of carp in the restoration area/how to manage carp (29)

Long term management/monitoring/permits/design issues

- Long term management/property ownership of restoration area (25, 29)
- Monitoring, success criteria, and adaptive management to assure habitat goals are reached (24, 25)
- General Permit required from FFSL (25)
- Provo City wetland mitigation site credits (27)
- Lakeview Parkway and Trail - ongoing coordination needed (27)
- Construction sequencing - some Provo City concerns (27)

Project support/opposition/preference

- General project support (9, 21)
- Favor Alternative B (3, 7, 12, 13, 19, 20, 23)
- General project opposition (1)

COMMENT LETTER 1

From: Bob Warner

Sunday, March 6, 2014
To: Richard Mungo
Utah Reclamation + Cons. Com.

I attended a local information session in Provo March 2. I expressed my views to both staff there and to a Daily Herald reporter - who published part of my views the next day in that paper. My opinions were not changed by all your posters and expenditures.

Washington Vis. Congress - ^{passes} ~~possesses~~ a law and locals have to take the consequences and bear the ramifications ^{if} they "receive" monies from our national government. Much has been written about endangered species and US attempts at conserving them. Resultant ventures such as spotted owl, darker snail etc have been questionable.

I cannot see any positive results in expending huge amounts of money to possibly preserve this anomalous sucker. I read about the Great Basin fish and their usefulness in the early history of the west. We are not dependent on this sucker in that river and your public meeting, as well as studies minimize sucker life on other tributaries of Utah Lake and do not make a credible argument for preservation in our lakes & streams. To pump water - divert natural streambeds - oxygenate it - ~~raise~~ ^{raise} & then kill increased mosquitoes sounds like a fairy tale story of too much money, power, and so called worthwhile projects gone wildly astray.

No to the project and its entangling ramifications.

Bob Warner

1.1

RESPONSES TO LETTER 1

Comment 1.1. Bob Warner says: I attended a local information session in Provo March 2. I expressed my views to both staff there and to a Daily Herald reporter – who published part of my views the next day in that paper. My opinions were not changed by all your posters and expenditures.

Washington Vis. Congress – passes a law and locals have to take the consequences and bear the ramifications if they “receive” monies from our national government. Much has been written about endangered species and US attempts at conserving them. Resultant ventures such as spotted owl, darter snail, etc. have been questionable.

I cannot see any positive result in expending huge amounts of money to possibly preserve this [anonymous] sucker. I read about the Great Basin fishes and their usefulness in the early history of the west. We are not dependent on this sucker in that river and your public meeting as well as studies minimalize sucker life on other tributaries of Utah Lake and do not make a credible argument for preservation in our lake and streams. To pump water – divert natural streambeds – oxygenate it – raise and then kill increased mosquitoes sounds like a fairytale story of too much money, power, and so called worthwhile projects gone wildly astray.

No to the project and its entangling ramifications.

Response: Thank you for submitting a comment. We believe the information session you are referring to was the public open house held in Provo, Utah on April 2, 2014. Information provided at the open house addressed some of your comments, but perhaps not all. Chapter 1 of the Draft EIS and the Final EIS provide more information regarding the basis for the project purpose and need (in particular see, Section 1.3 of Chapter 1).

COMMENT LETTER 2



Utah County Commission

Doug Witney

100 East Center Street
Suite 2300
Provo, Utah 84606

Phone 801-851-8136
Fax 801-851-8146
dougw.ucadm@state.ut.us

April 1, 2014

Dear Richard,

Having written a similar letter to you last fall, you know of my concerns. I am reaffirming my position in response to the Draft Environmental Impact Statement for the Provo River Delta Restoration Project. I have reviewed the statement, and would like to voice my concerns for the project again, which I will list.

2.1

1. The potential for creating an environment that would further the mosquito population in close proximity to a large residential area and the regulation that forbids the spraying and control of the mosquitos.

2.2

2. Diversion of the Provo River and its intended and/or unintended disruption of sport fishing and scouting activities.

2.3

3. The impact on private property owners and agricultural impact. We strongly support the use of existing canals and waterways to provide the proper environment for the June Sucker. It will reduce the loss of prime agricultural ground.

2.4

4. The loss of control over a major river in Utah County. Provo river has a historical significance for Utah county and the State of Utah as a whole.

2.5

5. Eventual government regulations and control of water on both Springville and Provo rivers. Not only are we having water dedicated to the June sucker, but the water ways of Hobble Creek and Provo River are now being scrutinized much more than before. This is a personal land rights issue.

Thank you,

Commissioner Doug Witney

RESPONSES TO LETTER 2

Responses to Letter 2

Thank you, Utah County Commissioner Witney, for providing comments regarding the Draft EIS.

Comment 2.1: Commissioner Witney expresses concerns regarding mosquitoes and mosquito abatement.

Response: Increased mosquito monitoring efforts and active abatement would be incorporated with implementation of any of the action alternatives. Consequently, the Joint Lead Agencies, in coordination with the Utah County Health Department, have developed a mosquito abatement plan specific to the proposed action. The mosquito abatement plan (Appendix C) has been revised in the Final EIS to exactly match Utah County's methods for surveying and treating the larval lifestage of mosquitoes.

Comment 2.2: Commissioner Witney expresses concern that diversion of the Provo River would disrupt sport fishing and scouting activities.

Response: In the Draft EIS and the Final EIS, two options for the existing river channel are advanced for detailed analysis (Chapter 2, Section 2.5). Under either option, the existing river channel would be kept in place and managed for recreational, aesthetic, and fishery uses. Under Option 2, by excluding upstream movement of undesirable fishes from Utah Lake into this channel segment, a community fishery could be maintained at the management discretion of the UDWR. With improvements in summer water quality and dissolved oxygen levels through aeration, maintenance of a trout fishery might also be possible.

Comment 2.3: Commissioner Witney expresses concern for impacts on private property owners and agricultural impact, and suggests use of existing canals and waterways to provide the proper environment for June sucker.

Response: The Joint Lead Agencies identified Alternative B as the preferred alternative because it was developed and revised with substantial involvement from study area landowners and other stakeholders (Chapter 2, Section 2.3). It was designed to reduce the amount of private land that would be acquired, especially the higher-value agricultural lands, while still meeting the project needs. The concept of using existing drainage channels/ditches to create habitat for June sucker was considered but dismissed because it would not meet the project need. That alternative and others that were considered but not advanced are discussed in Chapter 2, Section 2.9.

Comments 2.4 and 2.5: Commissioner Witney expresses concern regarding "loss of control over a major river in Utah County," and states that the Provo River has historical significance for Utah County and the State of Utah as a whole. Commissioner Whitney further expresses concerns regarding government regulations and control of water,

mentioning both Hobble Creek and the Provo River with respect to water dedicated to June sucker.

Response: Section 1.3.7 of the Draft EIS and the Final EIS provides background information regarding the Central Utah Project Completion Act (CUPCA) and the relationship of the proposed project to water development and growth in Utah. Section 1.3.8 describes water supplies that have been or that are being acquired to support June sucker. Under Section 302(a) of the Central Utah Project Completion Act, the Mitigation Commission and the Central Utah Water Conservancy District were authorized to acquire water rights for the purpose of establishing instream flows in the lower Provo River.

Section 2.6.2 provides additional information regarding management of Provo River instream flows, under existing conditions and under the proposed project. Various entities—federal, state, and local—participate in managing flows to meet various water delivery commitments. The June Sucker Flow Work Group is a multi-agency group comprised of water users and stakeholders in the Provo River and Hobble Creek drainages. This group meets as needed to coordinate flow patterns.

It is also important to note that water deliveries described in the Draft and Final EIS are constrained by the actual capacity of the delivery facilities, system shutdowns for periodic maintenance needs, and are subject to shortages under water rights and water contracts.

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COMMENT LETTER 3

April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Larry Ellerton			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself ^{and} the following organization: Utah County Commission

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below:

3.1

I appreciate the manner that the mitigation commission has worked with property owners and the public to try and find acceptable solutions. Alternative B seems to accomplish the desired results of the project while being acceptable to landowners. I am hopeful that it (the proposed alternative) can be selected along with efforts to maintain a healthy aquatic life and attractive environment for recreational uses of the present river channel. The mitigation efforts displayed seem to be valuable in doing this and it appears should be part of the plan.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

*I thank you,
 Larry Ellerton
 Utah County Commission*

RESPONSES TO LETTER 3

Comment 3.1. Utah County Commissioner, Larry Ellertson, says: I appreciate the manner that the Mitigation Commission has worked with property owners and the public to try and find acceptable solutions. Alternative B seems to accomplish the desired results of the project while being acceptable to landowners. I am hopeful that it (the Preferred Alternative B) can be selected along with efforts to maintain a healthy aquatic life and attractive environment for recreational uses of the present river channel. The aeration efforts displayed seem to be valuable in doing this and it appears should be part of the plan.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. As you state, Alternative B is identified as the Joint Lead Agencies' preferred alternative (Chapter 2, Section 2.3). It was developed and then revised with substantial involvement from study area landowners and other stakeholders. It was designed to reduce the amount of private land that would be acquired while still meeting June sucker spawning and rearing habitat improvement needs.

Under either of the two options for the present river channel (Chapter 2, Section 2.5), the existing channel would be kept in place and managed for recreational, aesthetic, and fishery uses. The proposed aeration system would be intended for use as needed to maintain at least State water quality standards for dissolved oxygen.

COMMENT LETTER 4

April 2, 2014
Provo Recreation Center
320 West 500 North
Provo, Utah

**PROVO RIVER DELTA
RESTORATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Carol Deal			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below:

4.1

I am in support of Alternative B
I am suggesting that the Berm
include a shoulder that would
allow for multiple uses-by horses
as well.
This area is a haven for many
with a love of the land, the peace
of the river and the farm life
of the area

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 4

Comment 4.1. Carolyn Seale says: I am in support of Alternative B. I am suggesting that the berm include a shoulder that would allow for multiple uses – by horses as well. This area is a haven for many with a love of the land, the peace of the river and the farm life of the area.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments, including an expression of the value of the area to the local community. The existing Provo River Trail would continue to be owned and maintained by Utah County, and the trails proposed as part of the current project would become part of the County's trail network. The proposed trails would be somewhat constrained spatially by the width of berms, however, your idea of accommodating horseback riders has been considered and discussed with Utah County officials as well as with Provo City. Both entities indicated their support for adding this type of feature to the recreational opportunities afforded by the project.

In the Final EIS the Joint Lead Agencies have incorporated an equestrian use trail along with the pedestrian use trail on the berm-to-be-constructed under any of the action alternatives described in Chapter 2. Additional details about recreation features are provided in Chapter 3, Section 3.15. Specific details of the trail will be developed during final design in consultation with Utah County, Provo City, and stakeholders.

COMMENT LETTER 5



April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Amy Spong			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below:

5.1

You say the "the preferred alternative was developed with landowner involvement" yet the land owners we know are absolutely not satisfied with payment for property, with mosquito abatement, and other things. Please don't take advantage of these hard-working simple folk. Their pain is intense.

Amy Spong

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 5

Comment 5.1. Amy Spong says: You say the preferred alternative was developed with landowner involvement, yet the landowners we know are absolutely not satisfied with payment for their property, with mosquito abatement, and other things. Please don't take advantage of these hard-working simple folk. Their pain is intense.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. Alternative B, described in Chapter 2, Section 2.3, is identified as the Joint Lead Agencies' preferred alternative. It was developed and then revised with substantial involvement from study area landowners and other stakeholders. It was designed to reduce the amount of private land that would be acquired while still meeting June sucker spawning and rearing habitat improvement needs.

There have not been any offers or attempts to acquire any private land yet as part of this project. If that step is to occur, it cannot happen until a Final EIS is released and a Record of Decision is issued that selects an action alternative. If that does occur, property acquisition would follow a standard process required by the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Public Law 91-646; 49 CFR Part 24). The Joint Lead Agencies must comply with the federal regulations to acquire private property and water rights. The full range of available land acquisition flexibility allowed under law would be explored with landowners to ensure, to the extent reasonable, that project goals can be achieved by means of land acquisitions that are mutually agreeable. This process is further described in Chapter 2, Section 2.10.1.

Increased mosquito monitoring efforts and active abatement would be incorporated with implementation of any of the action alternatives. Consequently, the Joint Lead Agencies, in coordination with the Utah County Health Department, have developed a mosquito abatement plan specific to the proposed action (Appendix C).

COMMENT LETTER 6



April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Mila Spang	[REDACTED]		

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below: *I am deeply concerned about:*

6.1

1. The impact any action this project will have upon the land & business owners in the area. Decreasing and altering the water flow will hurt the local landowners.

6.2

2. Adding marshland will increase mosquitos and decrease the living standard. It will decrease my property value when I can no longer tolerate being in my backyard for the bugs.

My strong personal preferance is to not adversely impact the property owners.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 6

Comment 6.1. Mike Spong says: I am deeply concerned about the impact any action this project will have upon the land and business owners in the area. Decreasing and altering the water flow will hurt the local landowners. . . .

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. Under either of the two options for the present river channel (Chapter 2, Section 2.5), the existing channel would be kept in place and managed for recreational, aesthetic, and fishery uses. The proposed aeration system would be intended for use seasonally as needed to maintain at least State water quality standards for dissolved oxygen. A flow of between 10 and 50 cubic feet per second would always be supplied to the existing channel. The goals of these actions would be to maintain and likely improve the quality of the existing channel and uses that it currently supports. No changes in these commitments were made between the Draft and the Final EIS.

Comment 6.2. Mike Spong continues, saying: ...Adding marshland will increase mosquitoes and decrease the living standard. It will decrease my property value when I can no longer tolerate being in my backyard for the bugs. My strong personal preference is to not adversely impact the property owners.

Response: Increased mosquito monitoring efforts and active abatement would be incorporated with implementation of any of the action alternatives. Consequently, the Joint Lead Agencies, in coordination with the Utah County Health Department, have developed a mosquito abatement plan specific to the proposed action (Appendix C).

COMMENT LETTER 7

PROVO RIVER DELTA RESTORATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Public Comment Form

April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Marisa Robins Nielsen	[REDACTED]	[REDACTED]	[REDACTED]

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below: I support Alternative B!

7-1

My father is M. Moreno Robins, owner of 37 acres of prime agricultural land. When we originally heard he was going to lose his land, we were devastated! My dad is now up to 77 descendants that enjoy coming to see the cows, ride the horses, bring friends to get out of the city and enjoy the country.

Then we heard about Alternative B and we are so happy!

Thank you! Thank you!

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 7

Comment 7.1. Marisa Robins Nielsen says: I support Alternative B! My father is M. Moreno Robins, owner of 37 acres of prime agricultural land. When we originally heard he was going to lose his land, we were devastated! My dad is now up to 77 descendants that enjoy coming to see the cows, ride the horses, bring friends to get out of the city and enjoy the country. Then we heard about Alternative B and we are so happy! Thank you! Thank you!

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. The Joint Lead Agencies identified Alternative B (Chapter 2, Section 2.3) as the preferred alternative in part because it was developed and revised with substantial involvement from study area landowners and other stakeholders. It was designed to reduce the amount of private land that would be acquired while still meeting the project needs.

COMMENT LETTER 8

April 2, 2014
Provo Recreation Center
320 West 500 North
Provo, Utah



**PROVO RIVER DELTA
RESTORATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Charmaine Thompson			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below:

8.1

The draft EIS does not adequately address cultural resource concerns. For example, has a complete survey been completed? How can a project in an area with few surface artifacts be considered one that will have "no effect?" Will monitoring be actively conducted by qualified archaeologists? The sites here are difficult to interpret when trenched. The damp soil makes it hard to identify features. As such, will any pre-construction trench testing for buried archaeological resources?

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 8

Comment 8.1. Charmaine Thompson says: The Draft EIS does not adequately address cultural resource concerns. For example, has a complete survey been completed? How can a project in an area with few surface artifacts be considered one that will have “no effect?” Will monitoring be actively conducted by qualified archaeologists? The sites here are difficult to interpret when trenched. The damp soil makes it hard to identify features. As such, will any pre-construction trench testing for buried archaeological resources [be required]?

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. A Class III Cultural Resources Inventory was completed in December 2013 and concluded that it is probable that buried prehistoric sites are located within the Provo River Delta Restoration project area. Please refer to the revised Section 3.17 of the Final EIS that addresses your concerns. In summary, it was determined in consultation with the State Historic Preservation Officer and the Consulting Parties and pursuant to 36 CFR 800.14(B)(1)(ii), that a Programmatic Agreement would be the best mechanism to address potential impacts to eligible resources. The Programmatic Agreement represents a commitment on the part of the Joint Lead Agencies to implement a plan to mitigate the effects of the undertaking through the development and implementation of a Testing Plan, Treatment Plan, and commitment to provide an on-site archaeological inspector during construction.

COMMENT LETTER 9

April 2, 2014

Provo Recreation Center
320 West 500 North
Provo, Utah

**PROVO RIVER DELTA
RESTORATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Rachel Whipple			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below:

9.1

I am very excited about this project. We as a people have done terrible harm to the river and lake through well-meaning ignorance and short-sighted action, and now that we are coming to know the damage we have done, we have an obligation to correct it as best we can. Thank you for the work/effort you've done so far, and I wish you ~~the~~ cooperative landowners, plentiful funding, and great success in restoring this wetland to natural productivity.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 9

Comment 9.1. Rachel Whipple says: I am very excited about this project. We as a people have done terrible harm to the river and lake through well-meaning ignorance and short-sighted action, and now that we are coming to know the damage we have done, we have an obligation to correct it as best we can. Thank you for the work and effort you have done so far, and I wish you cooperative landowners, plentiful funding, and great success in restoring this wetland to natural productivity.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. Your support for the project is acknowledged and appreciated.

COMMENT LETTER 10 (Page 1)

April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Rachel Whipple			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: Provo Bike Committee

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please comment below:

10.1

More comments with trail design input will be forthcoming from the Bike committee. We love the Provo River Trail and see it as a great asset to our city. We want to see expansion of the trail, more connection ~~to~~ to city streets, and more signage along the trail indicating distances, location (cross-streets, etc) and way finding. The current trail is heavily used, especially during fair weather, but even in the worst of winter people use the trail for recreation and to safely travel from one part of the city to another.

10.2

Any construction that would interrupt use of the trail should occur in the dead of winter and be completed as quickly as possible.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

**Provo River Delta Restoration Draft Environmental Impact Statement (April 2, 2014)
Public Comment Form**

Continued comment:

If it is possible to keep the trail open during construction (akin to having one lane of traffic open to cars) that would be best.

10.3

We would love to see some separation of pedestrian walkways and bicycle trails, much like the north University Greenway area just south of the Riverwoods.

Thank you! Your participation is greatly appreciated.

RESPONSES TO LETTER 10

Comment 10.1. Rachel Whipple, as a representative of the Provo Bike Committee, says: ... We love the Provo River Trail and see it as a great asset to our city. [We] want to see expansion of the trail, more connection and access to city streets, and more signage along the trail indicating distances, location (cross-streets, etc.) and way finding. The current trail is heavily used, especially during fair weather, but even in the worst of winter people use the trail for recreation and to safely travel from one part of the city to another....

Response: Thank you for attending the public open house on April 2, 2014 and providing comments regarding the value of the Provo River Trail to the local community. New trails proposed under any of the action alternatives are intended to provide the same opportunities and uses as the existing Provo River Trail and to connect with the existing trail, which would be retained. A portion of the existing Skipper Bay dike trail would be removed to create the necessary river-lake interface habitat; however, any of the action alternatives would result in a net increase in trail length and greater trail connectivity than currently provided. Additional details are provided in Chapter 3, Section 3.15.

Comment 10.2. The commenter continues, saying: ...Any construction that would interrupt use of the trail should occur in the dead of winter and be completed as quickly as possible. If it is possible to keep the trail open during construction (akin to having one lane of traffic open to cars) that would be best....

Response: Your suggestion can be considered in construction planning. Other factors will also influence construction timing; in particular, avoiding construction in the existing channel during the June sucker spawning period, avoiding adverse effects to nesting migratory birds, and avoiding significant interruption of irrigation water conveyance (Chapter 2, Section 2.10.2). Construction timing will strive to balance the needs of these different interests.

Comment 10.3. The commenter continues, saying: ...We would love to see some separation of pedestrian walkways and bicycle trails, much like the North University Greenway area just south of the Riverwoods.

Response: The existing Provo River Trail would continue to be owned and maintained by Utah County, and the trails proposed as part of the current project would become part of the County's trail network. The proposed trails would be somewhat constrained spatially by the width of berms and to follow the Utah County design standard, which is for a 10-foot wide paved surface with a 1-foot shoulder on each side of the trail; however, your idea of providing separation of pedestrians and bicycles might be accomplished through signage and painting lines on the pathway, and can be considered in final design in consultation with Utah County.

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COMMENT LETTER 11

April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Susan Malone			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

11.1

Please comment below:

I am in favor of Alternative B, while I am sad about losing the Shipper Bay part of the trail, the extended trail along the dyke + the viewing tower would be nice additions. It would be beneficial to widen the trail another foot to accommodate horse back riding (the widened part should be dirt for the horses)

11.2

Perhaps there will be a way to encourage youth groups in the area to build bat boxes to be installed in the area to help with mosquito abatement as well.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 11

Comment 11.1. Susan Malone says: I am in favor of Alternative B. While I am sad about losing the Skipper Bay part of the trail, the extended trail along the dike and the viewing tower would be nice additions. It would be beneficial to widen the trail another foot to accommodate horseback riding (the widened part should be dirt for the horses)....

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. As you note, a portion of the existing Skipper Bay dike trail would be removed to create the necessary river-lake interface habitat. New trails proposed under any of the action alternatives are intended to provide the same uses as the existing Provo River Trail and to connect with the existing trail, which would be retained. Any of the action alternatives would result in a net increase in trails.

The existing Provo River Trail would continue to be owned and maintained by Utah County, and the trails proposed as part of the current project would become part of the County's trail network. Your idea of accommodating horseback riders has been discussed with Utah County officials as well as with Provo City. Both entities indicated their support for adding this type of feature to the recreational opportunities afforded by the project.

In the Final EIS the Joint Lead Agencies have incorporated an unpaved trail along with the pedestrian use trail on the berm-to-be-constructed in Alternative B, and also with Alternatives A and C, should either of those alternatives be selected. Additional details are described in Chapter 3, Section 3.15. Specific details of the trail designs and parking areas will be developed during final design in consultation with Utah County, Provo City, and stakeholders.

Comment 11.2. The commenter continues, saying: Perhaps there will be a way to encourage youth groups in the area to build bat boxes to be installed in the area to help with mosquito abatement as well.

Response: The Joint Lead Agencies, in coordination with the Utah County Health Department, have developed a mosquito abatement plan specific to the proposed action (Appendix C). Thank you for your suggestion, which can be considered as a potential component of an overall mosquito abatement strategy.

COMMENT LETTER 12

April 2, 2014
Provo Recreation Center
320 West 500 North
Provo, Utah

**PROVO RIVER DELTA
RESTORATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Elissa Van Marter			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

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Please comment below:

12.1

12.2

12.3

Looking at the different options I think alternative B looks to be the best option. I want to see land owners being able to keep their private lands. I live nearby and use the provo river trail frequently and want to see the existing trail kept. With the new trails being added I hope they will make it wide enough for people to ride their horses on, as they can't on the current trail.

The other concern I have is the mosquitoes, but I was glad to hear the plans for spraying.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

RESPONSES TO LETTER 12

Comment 12.1. Elissa Van Marter says: Looking at the different options I think Alternative B looks to be the best option. I want to see landowners being able to keep their private lands.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. Alternative B (Chapter 2, Section 2.3) is identified as the Joint Lead Agencies' preferred alternative. It was developed and then revised with substantial involvement from study area landowners and other stakeholders. It was designed to reduce the amount of private land that would be acquired while still meeting June sucker spawning and rearing habitat improvement needs.

Comment 12.2. Elissa Van Marter continues, saying: I live nearby and use the Provo River Trail frequently and want to see the existing trail kept. With the new trails being added I hope they will make it wide enough for people to ride their horses on, as they can't on the current trail.


Response: The existing Provo River Trail would continue to be owned and maintained by Utah County, and the trails proposed as part of the current project would become part of the County's trail network. The proposed trails would be somewhat constrained spatially by the width of berms, however, your idea of accommodating horseback riders has been discussed with Utah County officials as well as with Provo City. Both entities indicated their support for adding this type of feature to the recreational opportunities afforded by the project.

In the Final EIS the Joint Lead Agencies have incorporated an unpaved trail intended for equestrian use along with the pedestrian use trail on the berm-to-be-constructed in Alternative B. Similarly, equestrian use would be incorporated in the trail design for Alternatives A and C, should either of those alternatives be selected. Additional details regarding recreation features are provided in Chapter 3, Section 3.15. Specific details of trail designs and parking areas will be developed during final design in consultation with Utah County, Provo City, and stakeholders.

Comment 12.3. Elissa Van Marter continues, saying: The other concern I have is the mosquitoes, but I was glad to hear the plans for spraying.

Response: Increased mosquito monitoring efforts and active abatement would be necessary with implementation of any of the action alternatives. Consequently, the Joint Lead Agencies, in coordination with the Utah County Health Department, have developed a mosquito abatement plan specific to the proposed action (Appendix C). In the Final EIS the mosquito abatement plan has been revised to match Utah County's methods for surveying and treating the larval life stage of mosquitoes.

COMMENT LETTER 13 (Page 1)



April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
David + Melita Hill (Robins)			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

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Please comment below:

13.1 - This has been a great presentation. It is obvious that a lot of time and effort has been put into the decisions pending for the restoration project. As a landowner, we would love the opportunity to maintain our horse/cow property as proposed in Alternative B. The Robins family have enjoyed many hours over the years riding horses and having family parties on that land. These are opportunities that have been shared with church groups, ^{keynote} date groups etc. The youth nud

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

**Provo River Delta Restoration Draft Environmental Impact Statement (April 2, 2014)
Public Comment Form**

Continued comment:

~~to preserve~~ these unique opportunities.

Ranching has been a great legacy in
our family.

Thank you for seriously considering
the Alternative B!

Melita Robins Hill

Thank you! Your participation is greatly appreciated.

RESPONSES TO LETTER 13

Comment 13.1. Melita Robins Hill says: This has been a great presentation. It is obvious that a lot of time and effort has been put into the decisions pending for the restoration project. As a landowner, we would love the opportunity to maintain our horse/cow property as proposed in Alternative B. The Robins family have enjoyed many hours over the years riding horses and having family parties on that land. Those are opportunities that have been shared with church groups, teenage date groups, etc. The youth need these unique opportunities. Ranching has been a great legacy in our family. Thank you for seriously considering the Alternative B!

Response: Thank you for attending the public open house on April 2, 2014 and providing comments.

COMMENT LETTER 14 (Page 1)

April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

PROVO RIVER DELTA RESTORATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Public Comment Form

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
STEVE GLEASON			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: PROVO AIRPORT / AND SELF

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

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Please comment below:

14.1

AIRCRAFT CONCERNS ARE: ~~THE~~ 1. POTENTIAL CREATION OF WETLANDS INCREASING BIRD STRIKE HAZARDS. 2. IMPACT STUDY USING QUESTIONABLE MULTIPLIERS TO FALSLY MINIMIZE BIRD HAZARDS (AS STATED BY FAA LETTER OF CONCERN). 3. CREATION OF CROSS HABITAT BIRD ATTRACTANTS CAUSING BIRDS TO MIGRATE ACROSS THE AIRPORT AT A PLACE THAT IS MOST DANGEROUS TO AIRCRAFT.

AIRCRAFT BIRD STRIKES ARE A SERIOUS HAZARD. INCREASING THE POSSIBILITY OF STRIKES WHEN AIRCRAFT ARE AT LOW ELEVATIONS IS A MISTAKE.

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

Provo River Delta Restoration Draft Environmental Impact Statement (April 2, 2014)
Public Comment Form

Continued comment:

THE CURRENT PLAN DOES NOT ADEQUATELY ADDRESS
LONG TERM MITIGATION OF BIRDS.

THIS PROJECT IS A POTENTIALLY DEADLY MAN-MADE
WILDLIFE ATTRACTANT, AND THE AIRPORT IS OPPOSED
TO INCREASED BIRD POPULATIONS.

THE LEAST OBJECTIONABLE ALTERNATIVE IS "B."
THIS STILL HAS THE POTENTIAL TO CREATE WILDLIFE
HAZARDS.

14.2

THE MEMBERS OF THE COMMISSION ARE INVITED
TO FLY THE PATTERN WITH US AND VIEW FIRST
HAND WHAT OUR CONCERNS ARE.

Thank you! Your participation is greatly appreciated.

RESPONSES TO LETTER 14

Comment 14.1. Steve Gleason, the Provo Airport Manager, says: Airport concerns are: 1) Potential creation of wetlands increasing bird strike hazards. 2) Impact study using questionable multipliers to falsely minimize bird hazards (as stated by FAA letter of concern). 3) Creation of cross habitat bird attractants causing birds to migrate across the airport at a place that is most dangerous to aircraft. Aircraft bird strikes are a serious hazard. Increasing the possibility of strikes when aircraft are at low elevations is a mistake. The current plan does not adequately address long term mitigation of birds. This project is a potentially deadly man-made wildlife attractant, and the airport is opposed to increased bird populations. The least objectionable alternative is "B." This still has the potential to create wildlife hazards.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. The Joint Lead Agencies acknowledge the concern regarding potential for increased risk of aircraft strikes with birds due to the project. The analysis provided in the Draft EIS and the Final EIS (Chapter 3, Section 3.16) concludes that there are substantial differences among the three action alternatives with respect to predicted changes in abundance of various bird species. The analysis especially focused on bird species and groups most hazardous to aircraft operations according to the Federal Aviation Administration (FAA) as well as based on input from yourself and other experts. None of the letters we received from FAA stated or referenced "using questionable multipliers to falsely minimize bird hazards." The FAA's comment letter regarding the Draft EIS (letter 22 in this appendix) with this respect states "the predictions of future avian communities included in the DEIS is not conclusive and cannot be relied upon to determine impacts to the airport."

The methods and approach to analyzing the potential effects of the project on bird abundance are described in Section 3.16.10. Bird abundance is one factor in assessing potential strike risk. Our analysis concluded that depending on the alternative, bird abundance is predicted to increase or decrease in various seasons if the proposed project is implemented. Obviously there are numerous factors that create or influence the risk of a bird-aircraft strike. In simple terms, the aircraft and the bird must come to occupy the same space at the same time. So the presence of a bird, or even a flock of birds, in the study area within 1.5 miles of Provo Airport does not in and of itself constitute a hazard to aircraft. The bird(s) become a potential hazard (risk) only if/when it takes flight over/across/through the airspace utilized by aircraft as they approach or depart the Provo Airport. It is not possible to observe the flight pattern or behavior of birds that are only predicted to exist; so the analysis considered the life history of the most hazardous bird species in attempts to consider this aspect.

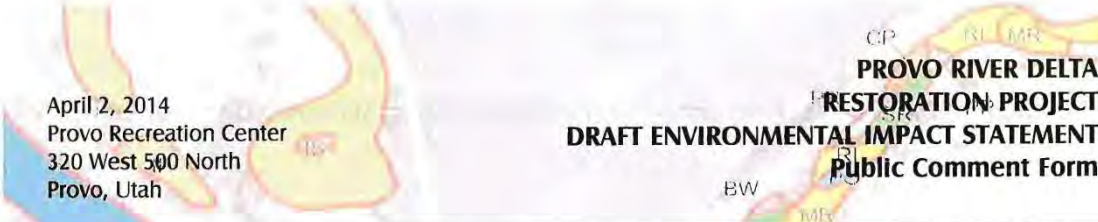
In the Final EIS the analysis added a step to convert predicted bird abundances to biomass values. This analysis provided additional insight about the potential bird-aircraft strike risks associated with each action alternative.

Our analysis concludes that under certain circumstances predicted bird abundance and bird mass changes could pose implications for public and aviation safety within the flight patterns of the Provo Airport. The Joint Lead Agencies therefore would commit, upon selecting an action alternative, to implement an appropriate bird abundance and movement monitoring program, together with an adaptive hazard mitigation program (Final EIS Chapter 3, Sections 3.16.11 to 3.16.13).

Comment 14.2. Mr. Gleason further states: The members of the Commission are invited to fly the pattern with us and view first-hand what our concerns are.

Response: Mr. Gleason facilitated a meeting and flight at the Provo Airport with representatives of the Joint Lead Agencies on May 6, 2014. The purpose of the meeting was to discuss aviation safety concerns and to see the proposed project area from the perspective of aircraft using the Provo Airport. Representatives of the Utah Valley University (UVU) School of Aviation Sciences provided pilots and aircraft. A follow-up meeting with Provo City Airport and UVU occurred on July 30, 2014 to discuss bird movement monitoring and mitigation for the entire airport vicinity, including the project study area, using a combination of ground and air monitoring techniques. Further development of this cooperative monitoring and mitigation plan potentially involving UVU was not pursued at UVU's request.

COMMENT LETTER 15 (Page 1)



April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
Naino D. Merkides			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself ^(both) the following organization: UVU-School of Aviation Sciences-Operations

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

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Please comment below:

15.1 As the director of Aviation Sciences - Operations for Utah Valley University I would like to bring the appropriate attention to the potential increase in waterfowl that will be an increased bird strike risk to the aircraft that fly into and out of the Provo Municipal Airport.
I would be interested in the type of studies that could help shed some light on the stated decrease of bird population in Option A/B and would strongly suggest that alternative C be limited due to the probability of large bird activity such as pelicans. The migration paths of
(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.


Provo River Delta Restoration Draft Environmental Impact Statement (April 2, 2014)
Public Comment Form

Continued comment:

The birds would also be of concern as the airport is directly situated between the proposed locations and "Mud" Lake to the south. Bird Strikes are a real threat to pilots and equipment not just for WU but all aircraft in the area.

I would suggest that continued conversation take place about this flight safety concern as the airport is slated to continue to grow, both in size and annual operations. I would be happy to help coordinate further conversations with airport users as able.

Thank you for your time and presentation. If I had to choose an alternative it would be "B" as it would have the most manageable impact on airport users from my perspective.

 April 2nd 2014

15.2

The executive summary talks about the technical report possibly addressing my concerns in more detail. I will look at that as well. The information provided today has been well done and I appreciate that a sign of the environment impact statement was provided.

Thank you! Your participation is greatly appreciated.

RESPONSES TO LETTER 15

Comment 15.1. Mario Markides, Director of Aviation Sciences-Operations for Utah Valley University (UVU), says: I would like to bring the appropriate attention to the potential increase in waterfowl that will be an increased bird strike risk to the aircraft that fly into and out of the Provo Municipal Airport. I would be interested in the type of studies that could help shed some light on the stated decrease of bird population in Option A and B and would strongly suggest that Alternative C be limited due to the probability of large bird activity such as pelicans. The migratory paths of the birds would also be of concern as the airport is closely situated between the proposed locations and “mud” lake to the south. Bird strikes are a real threat to pilots and equipment not just for UVU but all aircraft in the area. I would suggest that continued conversation take place about this flight safety concern as the airport is slated to continue to grow, both in size and annual operations. I would be happy to help coordinate further conversations with airport users as able. Thank you for your time and presentation. If I had to choose an alternative it would be “B” as it would have the most manageable impact on airport users from my perspective.

Response: Thank you for attending the public open house on April 2, 2014 and the presentation you provided to Joint Lead Agencies at the Provo Airport on May 6, 2014. The analysis provided in the Draft EIS concludes that the abundance of some bird species is expected to increase during some seasons and localities while the abundance for other species is expected to decrease if the proposed project is implemented. It further concludes that under certain circumstances increases could pose implications for public and aviation safety within the flight patterns of the Provo Airport. The Joint Lead Agencies therefore commit to implement a bird abundance and movement monitoring program, together with an adaptive hazard mitigation program. Additional details regarding this program are described in the Final EIS, Chapter 3 Sections 3.16.11 and 3.16.13.

Also in the Final EIS we have included data provided by UVU documenting 8 aircraft-bird strikes at or near Provo Municipal Airport in 2012 and 2013 (Chapter 3 Section 3.16.8). We appreciate receiving this information.

Comment 15.2. Mario Markides continues, saying: The executive summary talks about the technical report possibly addressing my concerns in more detail. I will look into that as well. The information provided today has been well done and I appreciate that a copy of the environmental impact statement was provided.

Response: Richard Mingo from the Utah Reclamation Mitigation and Conservation Commission sent an email message to Mr. Markides on April 8, 2014 with information regarding where/how to download the technical report.

COMMENT LETTER 16 (Page 1)



April 2, 2014
 Provo Recreation Center
 320 West 500 North
 Provo, Utah

**PROVO RIVER DELTA
 RESTORATION PROJECT
 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Public Comment Form**

NAME	STREET ADDRESS	PHONE	E-MAIL ADDRESS
BEN MARKHAM			

Please inform me about project developments via: e-mail postal mail not at all.

I represent myself the following organization: _____

Comments are most helpful that address issues regarding alternatives, address the adequacy of the analysis, or identify new information not already included in the Draft Environmental Impact Statement. Comments should be as specific as possible and include suggested changes, sources, methodologies, and references to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision-making process but will not receive a formal response.

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16.1

Please comment below: I like Alternative B. It can evolve to alternative A if needed -- not likely in my opinion. I like option 2 with the control dam. BUT it needs a fish ladder (2 way) to allow natural movement of fish both ways. It appears this project is being studied to an extreme (it's) to satisfy neighbors' & land owners' who continue to find issues. Is there a way to "finish" the study and get on with the project. I support that. Don't let special interests drive the cost. (over)

(Continue on reverse if needed.)

Comments will be accepted by Mr. Richard Mingo until May 7, 2014. Send comments to 230 South 500 East #230, Salt Lake City, Utah 84102, or Rmingo@usbr.gov.

**Provo River Delta Restoration Draft Environmental Impact Statement (April 2, 2014)
Public Comment Form**

Continued comment:

to an unreasonable level -

Overall I support the project.

Concerns

- Fish ladder for dam on Option 2
(2 way)

- Airport safety impact of more
bird habitat (I like birds)

- Too much study -- move to action

Thank you! Your participation is greatly appreciated.

RESPONSES TO LETTER 16

Comment 16.1. Ben Markham says: I like Alternative B. It can evolve to Alternative A if needed—not likely in my opinion. I like Option 2 with the control dam, BUT it needs a fish ladder (2-way) to allow natural movement of fish both ways. It appears this project is being studied to an extreme (\$\$\$) to satisfy neighbors and landowners who continue to find issues. Is there a way to “finish” the study and get on with the project? I support that. Don’t let special interests drive the cost to an unreasonable level. Overall I support the project. Concerns: fish ladder (2-way) for dam in Option 2; airport safety impact of more bird habitat (I like the birds); too much study – move to action.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments. Under other (ordinary) circumstances, the Joint Lead Agencies would support the concept of a fish ladder. However in this instance we deliberately would not include a fish ladder on the dam if Option 2 were selected, for the following reasons. First, we would not want June sucker adults to be able to swim upstream over the dam on their annual spring spawning migration and thereby gain access to the isolated remaining segment of the river channel. We know that under present conditions those larval fish produced in the existing river channel don’t survive past about 1-inch in size, and we would not want to facilitate continued access to this river segment by spawning June sucker in the future. By blocking off the old river channel, June sucker (as well as other fishes) would seek out and find the new mouth of the Provo River to the north, and begin using it to gain access to the river. Secondly, the remaining river channel segment upstream of the small dam under Option 2 would be managed and developed as a recreational fishery. Access from Utah Lake via a fish ladder would allow numerous fish species, some undesirable from a fisheries management perspective (e.g. carp, northern pike, etc.), to gain access to the river segment and potentially disrupt fishery management goals. By retaining the ability to manage the riverine segment separately from Utah Lake, managers would retain more control over the fish community.

The potential effects of the project on bird populations and potentially associated aircraft strike risk at Provo Municipal Airport is addressed in the Draft and Final EIS (Chapter 3, Section 3.16).

The National Environmental Policy Act of 1969 (NEPA) requires all Federal Agencies to take a hard look at the likely consequences of the actions prior to implementing them. The purpose of the legislation is to provide Federal decision makers with the information to help them make better decisions while at the same time providing a mechanism to inform and involve the public. While it may appear that the amount of time and money spent on analyzing the potential impacts is excessive, the Joint Lead Agencies believe that relevant issues need to be considered in sufficient detail to compare and contrast the likely impacts of the alternatives should they be implemented.



Utah Statewide Archaeological Society

Mr. Richard G. Mingo
Utah Reclamation Mitigation &
Conservation Commission
230 South 500 East, Suite 230
Salt Lake City, Utah 84102
rmingo@usbr.gov

02 April, 2014

Richard,

Thank you for this opportunity to comment on the Draft Environmental Impact Statement (DEIS) prepared by URMCC and the Joint Lead Agencies (JLAS) for the Provo River Delta Restoration Project. While the Utah Statewide Archaeological Society (USAS) is primarily concerned with protection and preservation of the cultural and archaeological resources of the area, our membership as lay citizens have shared interests in aspects gathered under the larger umbrella of anthropology as well as the concerns of the culture of today and of the future.

In a general sense, and for particular reasons, it is USAS's opinion that concerns for the protection and preservation of cultural and archaeological heritage under The National Historic Preservation Act (NHPA) and the Utah Antiquities Act (UCA) would be best served by alternatives providing the greater extent of coverage within the study area in support of the underlying purpose and need of the proposed project. Therefore we would recommend action Alternative A for the study area and Option 2 for the existing river channel under review in the DEIS.

For a better sense and understanding of the particulars of this reasoning please consider the following comments with reference to the Provo River Delta Restoration Project DEIS.

3.17 Cultural and Paleontological Resources

This area of interface of Utah Lake and the Provo River in west Provo, Utah, was one of the most heavily populated Utah lakeside areas in pre-history. "Utah Lake and the Provo River, in particular, provided permanent water and a variety of fish, animal, and plant resources throughout prehistory. Naturally occurring food resources would have been particularly plentiful along the river corridor and in wetlands near the lake. The availability of water and fertile soil also allowed agriculture and the use of domesticates during the Fremont period (Janetski 1990). The combination of reliable water and food, then, supported high site densities and the establishment of long-term prehistoric village sites in the area." (*Provo River Delta Cultural Resource inventory: LSD Technical Report No. 1 35480, Pg. i-ii*)

COMMENT LETTER 17 (Page 2)

Historically, this area of west Provo was home to the Timpanogos Utes and their meeting place as they greeted Dominguez and Escalante on their 1776 expedition (Dr. Joel C. Janetski, personal communication). Springs, creeks, lakes and rivers were of significant importance to the Ute people culturally and religiously, being the provider of life to the people and home to spirits that inhabited their stories and sated their inner lives (Clifford Duncan, Ute Tribal Elder, personal communication). Some sense of importance to our own society today is found in the following statement. "Open space between the urban fringe and Utah Lake provides a visual relief important to the visual character and recreational separation of Provo River and Utah Lake." **(3.15.1 Issues Addressed in the Impact Analysis, Pg.3-157)**

Archaeological, cultural and heritage resources are non-renewable and non-replaceable. They represent a unique history of the people that inhabited the study area and their cultures that can be found in no other form. These resources are indispensable in recording the human experience here in Utah and the world, the insight and significance of which can only be fully appreciated in the future in which we share with them. Therefore the utmost consideration should be afforded for their protection, preservation and educational presentation.

Therefore legislation under the NHPA and UCA was enacted by our governmental institutions.

Therefore the State Historic Preservation Officer (SHPO), Native American tribes, the Public and other impacted and interested parties are notified and invited to participate in consultation.

17.1 3.17.1 Issues Addressed in the Impact Analysis 3-201

The significance and spirit of regulation regarding the protection and preservation of archaeological and cultural heritage under the NHPA and UCA (see above) should be addressed in addition to the letter of these laws as outlined under the headings **Regulatory Setting** and **Consultation**.

3.17.2 Issues Eliminated from Further Analysis or Addressed in Other SectionsNo comment

3.17.3 Area of Potential Effects (APE)..... 3-202

17.2 The potential area of effects for archaeological and cultural heritage is the study area and surrounding lands, this includes the existing Provo River channel, shoreline trails, and areas adjoining and including Utah Lake State Park. Further, the impacts of any ground disturbing activities associated with the proposed project, including grubbing of land in preparation of reseeding or replanting, and construction of Public access to the new river delta area and existing Provo River channel via river access easements and parking areas, would also have to be considered under the area of potential effects (APE) for cultural and heritage resources. Archaeological monitoring, testing, and recovery planning will provide for the protection and preservation of cultural and archaeological resources in these areas impacted by the project.

17.3 The existing river channel and its immediate surroundings, has been extensively and dramatically impacted by modern development all along its course. Therefore, in the interest of preservation of archaeological and cultural heritage the implementation of Option 2 would be the preferred option.

17.4

“Under Option 2 a small dam or weir would be constructed across the Provo River channel near Utah Lake, approximately 600 feet downstream of Center Street Bridge, near an existing walking bridge that crosses the river to the south from Utah Lake State Park.” (2.5.3 Option 2: Managed Water Elevation Separate from Utah Lake, Pg. 2-7, also S.2.2 Existing Channel Options, Pg. ES-4) It should be noted that long-time members of USAS have identified the area near this walking bridge as an extensive artifact scatter in the past that may be associated with one of the archaeological sites identified in the *Provo River Delta Cultural Resource inventory: Utah State Project No. U-13-LI-0991p, LSD Technical Report No. 1 35480*, or possibly a separate site yet to be defined.

17.5

A stated goal of the small dam at the mouth of the river would be to provide opportunities to temporarily dewater the existing channel making it accessible to heavy equipment that could be used to restore a more natural waterway and to make improvements in water quality and for recreation, including safer access to the water in designated locations. Additional details for improving the condition of the existing channel would be incorporated during final design and would involve ongoing coordination and cooperation with Utah County, Provo City, landowners, and interest groups. (3.15.6 Impacts of Action Alternatives- Existing Channel Options- Option 2, Pg. 3-161-162) Archaeological monitoring, testing, and recovery would provide for the salvage and preservation of cultural and archaeological resources in this area already heavily impacted by development.

17.6

The construction and restoration of shoreline trails and viewing tower in the west of the study area, and areas adjoining and including Utah Lake State Park, will pose direct and indirect impacts to three known archaeological sites identified within the study area. Two of the sites have been described as one site (see Polk and Johnson 2010:17), though the sites, as currently shown, are separated by a quarter mile. The largest of the sites is mapped as a large area within Utah Lake State Park, to the north of the park, and extending into the southwest corner of the Provo River Delta inventory area. The smaller of the sites is some distance to the north at the lake shore. Both sites were originally recorded prior to the use of GPS-based mapping technology, however, and it is possible that one or both of the sites have been mis-plotted. It’s also possible that the area between the two sites contains cultural resources-connecting the two sites into one site, but the maps for the two sites have not been updated to reflect the association. (*Provo River Delta Cultural Resource inventory: LSD Technical Report No. 1 35480, Pg. 8*) Archaeological monitoring, testing, and recovery planning will provide for the protection and preservation of cultural and archaeological resources in this area impacted by the project.

17.7

3.17.4 Affected Environment (Baseline Conditions) 3-202

This area of west Provo was one of the most heavily populated Utah lakeside areas in pre-history. “Utah Lake and the Provo River, in particular, provided permanent water and a variety of fish, animal, and plant resources throughout prehistory. Naturally occurring food resources would have been particularly plentiful along the river corridor and in wetlands near the lake. The availability of water and fertile soil also allowed agriculture and the use of domesticates during the Fremont period (Janetski 1990). The combination of reliable water and food, then, supported high site densities and the establishment of long-term prehistoric village sites in the area. (*Provo River Delta Cultural Resource inventory: LSD Technical Report No. 1 35480, Pg. i-ii*)

Historically, it was home to the Timpanogos Utes and their meeting place as they greeted Dominguez and Escalante on their 1776 expedition (Dr. Joel C. Janetski, personal communication). Springs, creeks, lakes and rivers were of significant importance to the Utes culturally and religiously, being the provider

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of life to the people and home to spirits that inhabited their stories and sated their inner lives. (Clifford Duncan, Ute Tribal Elder, personal communication). Some sense of the importance to our own society today is found in the following "Open space between the urban fringe and Utah Lake provides a visual relief important to the visual character and recreational separation of Provo River and Utah Lake."

(3.15.1 Recreational Resource, Issues Addressed in the Impact Analysis, Pg.3-157)

Experience with archaeological sites in the surrounding and immediate area, many of which have been obscured by or destroyed by development, located in agricultural plow zones, or in the lakeside environment, has shown that these sites can be anywhere from a few centimeters to well over a meter in depth. Their condition is dependent largely on their treatment historically or over hundreds if not thousands of years of deposition. Known sites within the study area located at the river-lake interface along extinct meanders of the pre-historic Provo River portend the existence of similar site locations further inland from the lake shore.

The Utah Reclamation Mitigation & Conservation Commission (CUWCD) and the Joint Lead Agencies (JLAs) for the Provo River Delta Restoration Project requested that Logan Simpson Design Inc. (LSD) conduct a cultural resources inventory to support the EIS. Specific tasks included intensive-level inventory; recording cultural resources and preparing National Register of Historic Places (NRHP) recommendations; making management recommendations for future actions; and preparing a report detailing the undertaking.

"The results of the Class I research are consistent with environmentally derived expectations and indicate a high density of complex residential sites in the Provo River delta... More than 138 mound sites have been described near Utah Lake and the Provo River (prior to the 1960s) and at least 20 large, well-documented residential mound sites are present within one mile of the project area. Mound sites are usually located in settings very similar to the Provo River Delta project area-on raised landforms near the lake shore, near old meanders of the Provo River, or close to streams in the river delta. The area near Utah Lake, including the project area, has been disturbed by agriculture and recent housing development, which has removed surface evidence of sites and made relocating these sites difficult. As a consequence, the 138 to 158 documented mound sites are much less than the actual number of mound sites in the area (Janetski 1990:237-240)." The report further explains. "Mounds are formed by the collapse of surface structures or semi-subsurface structures like pit houses. During the 1930s, amateur archaeologists documented more than 100 mounds near Utah Lake and the Provo River; university archaeologists documented another 38 mounds in 1968, though the mounds were not well documented or plotted accurately... The delta region has been heavily disturbed by decades of farming and recent housing development, however, which has disturbed mound sites, removed surface evidence of sites, and made relocating these sites difficult (Janetski 1990:237-240).

"Natural flood cycles have also covered sites in the area. The interior of the project area was inundated during 1856 (See Appendix A: Large Size Figures and Maps, Fig. A-10), as indicated by historic GLO maps, and during 1930, 1952, and 1982-1983 (Holzapfel 1999). Other undocumented flood events have also occurred. These flood events deposited sediment and have likely buried archaeological sites within the area. Sites might be deeply buried (one meter or more) or shallowly buried (less than a half meter).

"Wave action and fluctuating lake levels have also impacted site visibility at the lake shore. In particular, lake-side sites have probably been buried and re-exposed numerous times by transgression/regression processes. The visibility of lake-side sites is dependent on the lake's location year-to-year and,

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depending on water levels, sites might currently be covered by the lake but visible during other years." One site in the west of the study area, "for example, was recorded during a low water year (1988) but is currently covered by the lake... In particular, erosion associated with wash and backwash, wave processes, and other high-intensity processes can abrade and re-work archaeological deposits into a lag along the beach (Waters 1992:270)." (*Provo River Delta Cultural Resource inventory: LSD Technical Report No. 1 35480, Pg.12*)

17.8

Many of the areas archaeological sites were recorded more than 50 years ago and have not been formally evaluated for the National Register of Historic Places (NRHP). A brief summary of the three sites recorded within the study area illustrates the significance of the sites likely to be encountered in undertaking the project.

- Artifacts recovered from these sites include ceramics, lithics, gaming pieces, bone beads and pendants, and faunal remains. The ceramics, though not formally typed, are likely associated with the Fremont culture based on their description. The faunal assemblage was mostly deer, bison, and wolf; bear, rabbit, and various birds comprise the remainder of the assemblage... Lithic materials included projectile points, spear points or knives, and several scrapers (Beely 1946).
- The larger of the sites extends into the southwest corner of the Provo River Delta project area. It was first recorded in 1961 (Jones 1961b) as an "extensive permanent habitation" site. The site description is sparse and appears to be based largely on the knowledge of several local informants. The site was described as covering several acres and containing numerous "arrowheads" and "extensive permanent habitations" (Jones 1961b). Construction of the Utah Lake State Park boat harbor (ca. 1961) destroyed much of the site, though it is unknown the extent of damages... The collection of surface artifacts removed an undetermined portion of the site, as did the subsequent construction of Utah Lake State Park, Utah Lake State Park boat harbor, and Utah Lake State Park campground. Recent depositional events have also likely covered the site with sediment. Despite these impacts it is probable that buried portions of the site remain within the southwest corner and immediately to the west and southwest of the project area.
- The third site, located immediately to the west of the project area, was first recorded in 1988 (Loosle 1985). The site contained prehistoric groundstone and lithic debitage. The site was recorded during a low water year and the western portion of the site is currently covered by Utah Lake."

17.9

Many archaeological sites have been recorded within one mile of the inventory area, the majority of which are large habitation "mound" sites containing numerous artifacts and features associated with the prehistoric period. Six historic sites have been documented and include irrigation systems, railroads, a levee, and a road. Five of the historic sites are NRHP-eligible. This leaves little doubt of the eligibility of the majority of these sites for the NRHP and that the area could be considered for listing as a NRHP district or multiple properties.

3.17.5 Impacts of the No-Action Alternative 3-203

“Consideration of a No-Action Alternative is required in regulations for implementing the National Environmental Policy Act (NEPA) (40 CFR 1502.14). This alternative considers the consequences of taking “no action” with respect to the purpose and need of the proposed action. Under the No-Action Alternative, the planned project would not be implemented, but remaining actions in the June Sucker Recovery Plan (USFWS 1999a) and JSRIP would proceed as planned, subject to NEPA compliance as appropriate.” (2.7 No-Action Alternative, Pg. 2-17)

17.10

Early in the process this option was eliminated because the underlying need for the project would not be achieved and the commitment to restore the Provo River delta as a necessary step toward delisting the June Sucker as an endangered species would still remain. While the Lead Federal Agencies would still be obligated to meet duties and responsibilities set forth in the NHPA and UCA in undertaking the remaining actions of the plan, direct, indirect and cumulative impacts of further industrial, commercial, and residential development would continue to pose threats to the archaeological and cultural resources of the study area. (S.2.3 New and Enhanced Public Recreation Opportunities, Pg. ES-8)

3.17.6 Impacts of Action Alternatives 3-203

In the conversion of lands within the new river corridor and delta area from agricultural use to a natural setting as the delta is reestablished, the project area would be protected from direct, indirect and cumulative impacts of further commercial, industrial, and residential development. (S.2.3 New and Enhanced Public Recreation Opportunities, Pg. ES-8) Being maintained as open space and a natural setting, the acquired area under any of the alternatives would maintain undisturbed or undiscovered archaeological features under conditions consistent with their pre-historic disposition over the past centuries and millennia. The acquisition boundary for Alternative A encompasses 507.3 acres, while the Alternative B acquisition boundary encompasses 310.3 acres, and the Alternative C acquisition boundary takes in 298.3 acres. In this regard Alternative A, which takes in most of the 100 year event floodplains established by FEMA in 1988 and less than the estimated area covered in the high water year of 1856, would afford the greatest extent of protection to the cultural and archaeological resources of the study area and be the preferred action Alternative. (Appendix A: Figs. A-1, A-10 and A-11)

17.11

17.12

Under each of the alternatives the proposed earthwork, including the rechanneling of the delta’s waterways, removal of the Skipper Bay Dike, the construction of new or reconstructed dikes, trails and viewing tower will pose direct impacts to known sites located within the study area. The removal of the Skipper Bay Dike and inundation of the restored delta will expose these sites and other undiscovered sites within the study area to further erosion and degradation from environmental processes.

17.13

Wave action and fluctuating lake levels impact sites where they are buried and re-exposed by transgression/regression processes, depending on the lake’s location and water level from year-to-year. These natural processes can impact internal site integrity, as well, by altering artifact distributions within sites and spreading artifacts outside the original site boundaries. In particular, erosion associated with wash and backwash, wave processes, and other high-intensity processes that can abrade and re-work archaeological deposits (Waters 1992). (Provo River Delta Cultural Resource inventory: Utah State Project No. U-13-LI-0991p, LSD Technical Report No. 1 35480 Pg. 12)

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Many of the projects features that could directly or indirectly impact the archaeological and heritage resources of the project area are common to all of the Action Alternatives but vary somewhat. (See **Chapter 2: Alternatives, and Appendix A: Figs. A-1, through A-6**) These include a diversion dam to be constructed in the Provo River (Jurisdictional Waters of the U.S.) and a new channel constructed to divert flow from the existing channel into the delta, and a new outlet dam would be constructed in the lower portion of Provo River/Utah Lake under Option 2. No fill would be placed in wetlands with Alternative A or B. However, Alternative C would require fill associated with the north berm to be placed in wetlands.

From the diversion point, a single meandering river channel would be excavated until it crosses the 4,491-foot contour (4,489-foot contour in Alternative B). The first 400 feet of the new channel (750 feet for Alternative B) would remain confined similar to the existing channel, facilitating the potential construction of a future bridge crossing for a new roadway that has been proposed by Provo City, known as the Provo Lakeview Parkway and Trail. Over the next 2,200 feet (1,610 feet, Alternative B) the channel would primarily be single-threaded. An 800-foot-wide floodplain is included in the preliminary design and land-acquisition boundary. This space would allow room for the channel to migrate over time, creating a floodplain with a natural mosaic of riparian forests, oxbows, wet meadows, and grassed uplands.

At about the 4,491-foot contour (4,489-foot contour Alternative B), the river would begin to divide into a distributary pattern. This very flat and broad portion of the project area would be influenced by both river and lake processes. Some initial channels and oxbow/pool features would be excavated within this zone.

Features that are common to naturally formed delta environments—such as abandoned channels, oxbow wetlands, and natural dikes—would be expected to form over time, adding to the desired habitat complexity of the project area. Portions of the existing Skipper Bay dike would be lowered to allow Utah Lake to inundate the project area and would retain water at a slightly higher elevation than the lake, enhancing habitat value for rearing June sucker.

Other features of the project plan are common to all Alternatives, though they vary to a greater degree in the final planning from each other. To prevent surface water from intruding from the project area, new berms would be constructed. For analysis purposes, a berm and integrated trail with a base 30 feet wide was assumed; actual dimensions and structural characteristics of the berm would be determined in final design. At the southeast end of the project area, the berm would tie into the existing Provo River levee and trail on the northwest side of the river and a new pedestrian bridge would be constructed across the new river channel alignment near the diversion point. The new alignment of Boat Harbor Drive has been routed to avoid existing wetlands and to minimize the number of privately owned land parcels that would be affected. The preliminary design includes a bridge over the existing river channel that would allow trails on both sides of the existing river channel to be routed underneath the realigned road rather than crossing at-grade. The easternmost portion of the existing Boat Harbor Drive would be retained as a dead-end access road, providing access from Lakeshore Drive to a Provo City pump facility on the north side of the road and an existing recreational trailhead on the south side. A viewing tower is also proposed at the end of the remaining portion of the Skipper Bay dike trail.

In Alternatives A and C, Approximately 1 mile of new trail would be constructed on the new berm constructed parallel to the newly aligned Boat Harbor Drive. The berm would continue west along Boat Harbor Drive until it tied in with the Skipper Bay dike Trail near Utah Lake State Park. This trail would

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connect to the existing Provo River Trail on the east end and to the Provo River trail on the west end, creating a new loop for trail users. The preliminary design for the berm meanders away from the Boat Harbor Drive periodically, creating pockets of land between the road and the berm that could be planted with trees and other desirable vegetation. This vegetated buffer would provide shade for a new trail that would be constructed on the berm.

For Alternatives B and C, a new berm would be constructed along the acquisition boundary which would bisect the study area from near the diversion point in the southeast end of the project area on a northwest bearing to the project boundary to the west.

In Alternative B approximately 1.2 miles of new trail would be constructed on the new berm. This trail would connect to the existing Provo River Trail on the east end with a trail segment adjacent to the realigned portion of Boat Harbor Drive. On the west end the new trail would connect to the remaining portion of the Skipper Bay dike trail, creating a complete loop for trail users with inclusion of an existing connection between trails along a small segment of 4200 West Street. Unique to Alternative B, a new river access parking area would be constructed. This access would require an easement for a portion of an existing private property access road. (A portion of this property access road would also be realigned along a portion of the berm, as illustrated in Figure A-3.)

For alternative C approximately 1.2 miles of new trail would be constructed on the new berms along the northern property acquisition boundary. The trail on the northern berm would terminate at the existing end of the Skipper Bay dike located at the far northwest end of the project study area. (See **Appendix A: Large Size Figures and Maps, Figures A-1 through A-6** for detailed views of that just described.)

All Alternatives would be paired with one of the two options for the existing channel that are described in Section 2.5., and the existing trails along the Provo River would be retained.

With Alternatives A or C An existing parking lot on the north side of the existing channel known as Alligator Park would be expanded. New parking and river access would be built to the north of Boat Harbor Drive at a location to the west of the existing Alligator Park. An existing picnic table and shade structure on the north side of Skipper Bay dike would be relocated to a more convenient location near the new trail and river access.

3.17.7 Indirect and Cumulative Impacts 3-203

17.14

Changes brought about by the project which impact new environmental conditions and land use patterns will indirectly impact the areas resources. The removal of the Skipper Bay Dike and inundation of the restored delta will expose known sites and other undiscovered sites within the study area to further erosion and degradation from environmental processes associated with the lake and river environment not present since early historic times. The creation of new dikes, trails and public access will lead to higher visitation of the area by the public, which if not properly addressed can lead to misuse and degradation of the areas resources. Even the choice of the No-Action Alternative would impart direct, indirect and cumulative impacts that further industrial, commercial, and residential development pose to the archaeological and cultural resources of the study area.

17.15

17.16

In the conversion of lands within the new river corridor and delta area from agricultural use to a natural setting as the delta is reestablished, the project area would come under protection from impacts posed

17.17

by further development. *(S.2.3 New and Enhanced Public Recreation Opportunities, Pg. ES-8)* Being maintained as open space and a natural setting, the acquired area under any of the alternatives would maintain undisturbed or undiscovered archaeological features under conditions consistent with their pre-historic disposition over the past centuries and millennia. In this regard Alternative A, which takes in most of the 100 year event floodplain established by FEMA in 1988 though less than the estimated area covered in the high water year of 1856, would afford the greatest extent of protection. This would likely apply to the culture and society of today as well as to the cultural and archaeological resources of the study area and be the preferred action Alternative.

3.17.8 Mitigation Measures 3-203

17.18

The Utah Reclamation Mitigation and Conservation Commission, the lead Federal agency on behalf of the Joint Lead Agencies, has expressed their intent to continue consultations with the State Historic Preservation Office, Public Lands Policy Coordination Office, Native American tribes, Utah Professional Archaeological Council, Utah Statewide Archaeological Society, and other consulting parties. The continued consultations will lead to the development of a Memorandum of Agreement outlining duties, obligations and commitments in regard to archaeological, cultural and heritage resources of the project area prior to a Record of Decision and before any ground-disturbing activities are implemented.

The agreement will detail the parties and agency commitments and actions. This should include instituting a vigilant Monitoring Plan outlining and guiding activities that will require monitoring. Forward testing of known sites and specific areas of interest, including landowner and local informant identified sites, and areas consistent with environmentally derived expectations of high site density. The agreement should detail a treatment plan for data recovery, and actions to be taken in the event of an incidental or inadvertent discovery of cultural resources or human remains, and provide communication protocols, and reporting guidelines to be followed. The plan should further set standards for the archaeological qualifications and permitting of investigators.

This plan and agreement would be implemented to best serve the public’s interest in and the Joint Lead Agencies’ obligation to the protection from adverse effects, and the preservation of the cultural heritage within the project area.

3.17.9 Cultural Resources Summary 3-204

17.19

While the cultural resources inventory conducted by Logan Simpson Design Inc. (LSD) did not discover any new visible indication of cultural resources in the inventory area, that result is not surprising considering that the delta region has been heavily impacted by decades of farming and residential development which has disturbed and removed surface evidence of sites, and made locating sites difficult.

The report results detailing the research and resource inventory concluded in the expectation of a high density of complex residential sites in the Provo River delta, noting that even the documented sites from as far back as the 1930’s, are likely much less than the actual number of sites in the area. Based on the combination of factors outlined, it is probable that NRHP-eligible buried prehistoric sites are located within the Provo River Delta Restoration project area. Prehistoric residential sites can be large, and considering the project areas proximity to previously documented sites of this type, there is a high

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probability that one or more of these sites will be inadvertently discovered during ground disturbing activities associated with the re-establishment of the Provo River delta.

17.20

The study further documented that known buried prehistoric sites are present within the study area though outside the inventory area, and that known and unknown sites likely extend into the area from adjoining border areas. This along with landowner identified sites, and environmental indicators, it is suggested a high probability exists for direct, indirect and cumulative impacts to a high density of cultural and archaeological resources valuable to the public and protected by State and Federal law.

17.21

Construction and ground disturbing activities associated with the proposed project, including diversion structures, meandering river channels and streambeds, oxbow/pool features, dike Trails, roads and bridges pose direct impacts to the archaeological and cultural resources of the study area. Further, ground disturbing activities such as grubbing of the land in preparation of reseeding or replanting, and construction of Public access to the new river delta and existing Provo River channel via river access easements and parking areas, would also have to be considered for potential effects to cultural and heritage resources.

17.22

Continued consultation leading to the development of a Memorandum of Agreement outlining duties, obligations and commitments with the URMCC, SHPO, PLPC, Native American tribes, UPAC, USAS, and other consulting parties, affords the best protection of the public's interest in the archaeological, cultural and heritage resources of the project area.

17.23

17.24

3.17.10 Educational Presentation A topic not addressed in the DEIS.

The newly developed Provo River Delta will provide new public space valuable to the culture and people of today living in and visiting the Utah Valley, creating enhanced education and recreation opportunities while fulfilling the other purposes of the proposed project.

Signage would be provided at the new parking and other trail access points to inform the public of the new trail system, including the use of primitive trails that are expected to develop throughout the project area. Important habitats to be protected would be identified and protected through signage and other means. The signage developed in cooperation with Federal and State agencies including Utah State Parks, UDWR, and the Utah Division of Forestry, Fire, and State Lands, local governments and others can further be incorporated for educational purposes. To inform the public of the importance of such delta habitats to aquatic ecosystems, fish and wildlife populations and to the people that inhabited the area for thousands of years and of their importance for the future.

Thank you again for this opportunity to take part and comment on the DEIS and the concerns for the Provo River Delta Cultural and Heritage Resources.

Sincerely,

Ren R. Thomas
President
Utah Statewide Archaeological Society

RESPONSES TO LETTER 17

Responses to Letter 17

Thank you, Mr. Thomas, for submitting comments on behalf of the Utah Statewide Archaeological Society (USAS).

Comment 17.1: USAS states that the significance and spirit of regulation regarding the protection and preservation of archaeological and cultural heritage under the NHPA and UCA should be addressed in addition to the letter of these laws.

Response: This comment refers to Section 3.17.1, page 3-201 of the Draft EIS, which describes responsibilities of regulatory agencies under the relevant laws. The Joint Lead Agencies concur that both the letter and spirit of the law should be adhered to. Please refer to the revised Section 3.17 in Chapter 3 of the Final EIS.

Comments 17.2 through 17.9: USAS states that the area of potential effects (APE) should be inclusive of all locations in which ground disturbing activities would take place (17.2). USAS states a preference for Option 2 for the existing channel (17.3), indicating that cultural resource sites may be located in or near the river channel near Utah Lake State Park (17.4). USAS recommends that archaeological monitoring, testing, and recovery planning will provide for the protection and preservation of cultural and archaeological resources in areas impacted by the project (17.6). USAS cites the cultural resource inventory supporting the Draft EIS, which identified cultural resource sites in other areas in the vicinity of Utah Lake State Park that may be more extensive than has been previously mapped (17.7). Many of the areas of archaeological sites were recorded more than 50 years ago and have not been formally evaluated for NRHP eligibility (17.8). Other archaeological “mound” sites have been recorded within one mile and sites in the general area are likely interrelated (17.9).

Response: Please refer to the revised Section 3.17 and response to comment 8.1 in this appendix. We appreciate USAS's participation in the development of the Programmatic Agreement referenced in the aforementioned sections and look forward to your continued support as we develop a Testing and Treatment Plan as provided in the agreement.

Comment 17.10: USAS states that the No-Action Alternative was eliminated early in the process because the underlying need for the project would not be achieved.

Response: This statement is incorrect. Consideration of a No-Action Alternative is required in regulations for implementing the National Environmental Policy Act (40 CFR 1502.14). The Draft EIS did state that the underlying need for the project would not be achieved under the No-Action Alternative and the commitment to restore the Provo River delta as a necessary step toward delisting would remain (Draft EIS, p. 2-17); however, the No-Action Alternative could be selected in the Record of Decision (ROD). In such an event, reasons for selecting the No-Action Alternative would be stated in the ROD.

Comments 17.11 through 17.23: USAS states that they believe reestablishing a natural setting delta will offer some protection to cultural and archaeological resources of the study area (17.16), and implementing Alternative A would afford the greatest extent of protection and therefore would be preferred (17.11, 17.17). On the other hand, the project itself could have effects to resources as a result of ground disturbance during construction (17.12, 17.21). Additionally, inundation of the restored delta area would likely expose sites to erosion and degradation (17.13 and 17.14). Public access created by the project, if not properly addressed, could lead to misuse and would contribute to degradation (17.15). It is probable that NRHP-eligible buried prehistoric sites are located within the study area (17.19), and unknown sites are likely to extend into the area from adjoining border areas (17.20). All disturbance areas would have to be considered for potential effects (17.22). Continued consultations will lead to the development of a Memorandum of Agreement outlining duties, obligations and commitments in regard to archaeological, cultural and heritage resources of the project area (17.18, 17.23).

Response: Section 3.17 of the Final EIS has been revised and is in agreement with these observations.

Comment 17.24: USAS states that educational objectives were not addressed in the Draft EIS. The project will provide new public space valuable to the culture and people of today living in and visiting the Utah Valley, creating enhanced education and recreation opportunities while fulfilling other purposes of the project. Signage should be developed through interagency efforts to inform the public about the recreation opportunities provided, the project's habitat protection objectives, and the importance of delta habitats to aquatic ecosystems, fish and wildlife populations, and to the people that inhabited the area for thousands of years, and of the importance for the future.

Response: Public recreation opportunities and the need for directional and interpretative signage is discussed in the recreation resources section of Chapter 3 (Section 3.15). We anticipate that the specific educational and interpretive material you have suggested can be further developed in the preparation of the Treatment Plan, an element of the Programmatic Agreement. As a Consulting Party, USAS will have the opportunity to further develop and provide input on these materials.

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COMMENT LETTER 18

4/4/14

DEPARTMENT OF THE INTERIOR Mail - Form Submission - New Form



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Form Submission - New Form

MESSAGE

Squarespace <no-reply@squarespace.com>
Reply-To: Jwgraff@gmail.com
To: rmingo@usbr.gov

Thu, Apr 3, 2014 at 8:46 PM

Name: James Graff

Email Address: Jwgraff@gmail.com

Message: Please provide primitive nature trails to allow close up observation of wildlife.

(Sent via Provo River Delta Restoration Project)

18.1

RESPONSES TO LETTER 18

Responses to Letter 18

Thank you for submitting a comment using the project website comment form.

Comment 18.1: James Graff requests that primitive natural trails be provided to allow close-up observation of wildlife.

Response: The Joint Lead Agencies anticipate that internal access into the project area by footpath would be allowed (See the public access discussion in Chapter 2, Section 2.6.6). The Joint Lead Agencies are not planning to construct footpaths, but based on experience with other projects, we anticipate footpaths to develop with visitor use.

COMMENT LETTER 19



Timp-Nebo Conservation District
302 East 1860 South
Provo, UT 84606
801-377-5580 ext. 117

April 16, 2014

Utah Reclamation Mitigation and Conservation Commission

19.1

The Timp-Nebo Conservation District strongly supports preferred Alternative B (S.2.1) of the Provo River Delta Restoration Project. This alternative minimizes the amount of private agricultural lands that will be acquired while still providing adequate space for a naturally functioning river delta and sufficient habitat enhancement. In addition, the Timp-Nebo Conservation District supports preferred Alternative B because it most closely aligns with the preference of local landowners.

Timp-Nebo Conservation District

Jesse Warren
Rex Larsen
Mick Balzly
Ryan Creer
Jeff Williams

Conservation – Development – Self Government

RESPONSES TO LETTER 19

Responses to Letter 19

Thank you for submitting comments representing the Timp-Nebo Conservation District.

Comment 19.1: The District's representatives state a preference for Alternative B, which minimizes acquisition of private agricultural lands and because it most closely aligns with the preference of local landowners.

Response: Alternative B (Chapter 2, Section 2.3) is identified as the Joint Lead Agencies' preferred alternative. It was developed and then revised with substantial involvement from study area landowners and other stakeholders. It was designed to reduce the amount of private land that would be acquired while still meeting June sucker spawning and rearing habitat improvement needs.

COMMENT LETTER 20



Alpine Conservation District
302 East 1860 South
Provo, UT 84606
801-377-5580 ext. 117

April 16, 2014

Utah Reclamation Mitigation and Conservation Commission

20.1

The Alpine Conservation District strongly supports preferred Alternative B (S.2.1) of the Provo River Delta Restoration Project. This alternative minimizes the amount of private agricultural lands that will be acquired while still providing adequate space for a naturally functioning river delta and sufficient habitat enhancement. In addition, the Alpine Conservation District supports preferred Alternative B because it most closely aligns with the preference of local landowners.

Alpine Conservation District

Sid Smart
Paul Hardman
Carey Smith
Kim Evans
Don Wadley

RESPONSES TO LETTER 20

Responses to Letter 20

Thank you for submitting comments representing the Alpine Conservation District.

Comment 20.1: The District's representatives state a preference for Alternative B, which minimizes acquisition of private agricultural lands and because it most closely aligns with the preference of local landowners.

Response: Alternative B (Chapter 2, Section 2.3) is identified as the Joint Lead Agencies' preferred alternative. It was developed and then revised with substantial involvement from study area landowners and other stakeholders. It was designed to reduce the amount of private land that would be acquired while still meeting June sucker spawning and rearing habitat improvement needs.

COMMENT LETTER 21



Re: Form Submission - New Form

scott phillips <scpk2@yahoo.com>
Reply-To: scott phillips <scpk2@yahoo.com>
To: "Mingo, Richard" <rmingo@usbr.gov>

Wed, May 21, 2014 at 10:04 AM

21.1

Thanks for replying to my email Richard. This is what I meant to send. "I really hope this project ends up going through. I have been really impressed with the middle Provo restoration project and the hobble creek project both of which I think turned out well. I have enjoyed hiking bird watching and fishing in these areas. I use to live in Springville so I have visited the hobble creek delta frequently. I have also walked the trail of the lower Provo where the river goes into Utah lake and can only imagine how the area could be improved. Right now the section of the Provo river that enters the lake is not all that enjoyable to walk, it looks more like a canal then a healthy river. I think the community as a whole would enjoy it more if the river was diverted as planned and made into a delta."

On Monday, April 28, 2014 8:36 AM, "Mingo, Richard" <rmingo@usbr.gov> wrote:

Scott - Thanks for your comments on the Provo River Delta Restoration Project. Your comment appears to have been cut off mid sentence. I'm trying to track down and fix this technical glitch but if you wouldn't mind resending your post, after "Right now it . . ." that would be greatly appreciated. My apologies for the inconvenience.

Richard Mingo | Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230 | Salt Lake City, Utah 84102
p. 801.524.3168 | c. 801.884.6130 | rmingo@usbr.gov

On Mon, Apr 28, 2014 at 7:15 AM, Squarespace <no-reply@squarespace.com> wrote:

Name: Scott Phillips

Email Address: scpk2@yahoo.com

Message: I really hope this project ends up going through. I have been really impressed with the middle Provo restoration project and the hobble creek project both of which I think turned out well. I have enjoyed hiking bird watching and fishing in these areas. I use to live in springville so I have visited the hobble creek delta frequently. I have also walked the trail of the lower Provo where the rver goes into Utah lake and can only imagine how the area could be improved. Right now it

(Sent via Provo River Delta Restoration Project)

RESPONSES TO LETTER 21

Responses to Letter 21

Thank you for submitting a comment using the project website comment form.

Comment 21.1: Scott Phillips states that he hopes the project is implemented, based on experiences with the middle Provo River Restoration Project and Hobble Creek.

Response: Thank you for your comment.

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COMMENT LETTER 22 (Page 1)



U.S. Department
of Transportation
**Federal Aviation
Administration**

Airports Division
Northwest Mountain Region
1601 Lind Avenue, S.W., Suite 350
Renton, Washington 98055-4056

May 6, 2014

Mr. Richard Mingo
Utah Reclamation Mitigation & Conservation Commission
230 South 500 East
Suite 230
Salt Lake City, UT 84102

Dear Mr. Mingo:

The U.S. Federal Aviation Administration (FAA) is a cooperating agency for the Environmental Impact Statement (EIS) development process for the proposed Provo River Delta Restoration project in Provo, Utah, which is adjacent to Provo Airport (Airport). The FAA's specific role as a cooperating agency is to provide input and expertise regarding the interaction between wildlife conservation efforts and aviation operations. The Airport provides both commercial and general aviation services and is located on the west edge of the city of Provo, adjacent to Utah Lake and Provo Bay. There were 172,014 total operations at the Airport in 2012. In addition, new commercial service started in 2013 (Phoenix in February, Oakland in June, and Los Angeles in September).

The intent of this letter is to provide our comments on the Draft Environmental Impact Statement (DEIS) and supporting documents. The FAA submits the following comments for your consideration and action:

22.1

1. We have serious concerns with both the DEIS and the Bird Aircraft Strike Risk Technical Memorandum (Memo) stating that there is a substantial risk for a bird strike at the Airport under existing conditions. A Wildlife Hazard Assessment (WHA) completed for the Airport does not support this claim. Please revise the documents accordingly to remove this assertion.

22.2

2. Page 3-176 of the DEIS states that the FAA *requires* reporting of wildlife strikes. This statement is inaccurate. The FAA *strongly recommends* that aircraft strikes are reported but does not *require* bird strikes to be reported. Please revise the document accordingly.

22.3

3. The completed Bird-Aircraft Strike study only considered the potential abundance of birds and did not consider bird movement. Bird movement is a crucial component in determining the wildlife strike risk. Birds will frequently move between habitats and this movement could occur in critical areas for the Airport at altitudes dangerous for aircraft. The Bird-

Aircraft Strike Assessment in the DEIS should be revised to include bird movements in the analysis, if possible, to determine the full potential impact to aviation.

22.4

4. The DEIS did not consider the potential bird strike risk that could occur during construction of the restored delta and during the initial development of the delta. Please include this information in the Final EIS.

22.5

5. The DEIS attempted to estimate future bird counts by manipulating data from the avian survey. However, it is difficult to predict how birds will use the site once the project is completed due to unknowns about several key factors. For example:
- a) A food source (agricultural land) will remain under the preferred alternative (Alternative B). In addition, the project will result in a seven-fold increase in fish habitat and increase macro-invertebrate species. This will result in food sources near new improved and contiguous habitat, something that does not exist today.
 - b) The delta will change over time as the river channel migrates and new side channels develop. In addition, the delta will have water year-round while the current Provo River channel experiences periods of low/non-existent stream flow.
 - c) The proposed project will create new habitat types (lacustrine vegetated aquatic bed) and improve existing habitats (significant increase in size, age structure and habitat quality of the riparian community), which do not currently exist.
 - d) The project will convert fragmented and disturbed habitat into a diverse, complex habitat that will provide healthy breeding grounds and support for migrant populations.

All of these factors will impact the types and numbers of birds that will be attracted to the site as well as how they will move. For these reasons, the prediction of future avian communities included in the DEIS is not conclusive and cannot be relied upon to determine impacts to the Airport. Therefore, FAA is recommending below that a continual monitoring program be established to quantify bird numbers and document bird movements across and adjacent to the Airport.

22.6

6. The bird strike risk cumulative impact section of the DEIS includes a discussion of past, present, and reasonably foreseeable future wetland mitigation projects. However, the section does not include a discussion of the upcoming Wildlife Hazard Management Plan (WHMP) development project. The DEIS bird strike risk cumulative impact section should be revised to include a description of the WHMP process and how the proposed project may impact the ability of the Airport to implement the recommendations in their WHMP.

22.7

7. With respect to the Bird Aircraft Strike Risk Technical Memorandum, FAA has several concerns:
- a) The areas surveyed included habitat that was substantially different from what is being proposed. For example:
 - i. The study used the avian survey data from Provo Bay to determine potential bird usage of the proposed project area during times when the site is inundated with water. However, Provo Bay is larger than the potential project area. Different birds will use large open water areas compared to smaller open water areas.

- ii. Areas surveyed included disturbed areas with fragmented habitat, which attracts different birds than what is being proposed (high quality habitat with less disturbance).
- b) Bird strike risk is not strictly correlated with an increase in bird population. There are other factors to consider when determining bird strike risk, including but not limited to bird types, location, and previous strike information.
- c) The BAM model only used 2012 survey data and only compares the four survey sites. This only tells us what the risk was for 2012 for these four sites. It does not indicate what the risk will be once the project is completed or how it compares to other sites.
- d) The analysis fails to capture how birds move throughout the area, how the creation of habitat next to food source will impact bird usage/movement, and if birds will use site differently after project implementation.

Therefore, FAA requests that changes be made to the document as appropriate to address these concerns regarding the analysis.

22.8

Based upon our review of the DEIS and supporting documentation, the FAA remains concerned about our ability to support the proposed project given the predicted increase in wildlife and potential to create wildlife hazards for the airport. We cannot ignore the potential effect the proposed project could have on the safety of aircraft and the flying public. Bird strikes and aviation wildlife hazards are a high priority with the FAA. Therefore, in addition to making the changes to the documents to reflect the above comments, the FAA respectfully requests that the following commitments be memorialized in a Memorandum of Agreement (MOA) and in the Record of Decision (ROD) for the Final EIS:

- Steps that the project proponent will take during construction, as well as during airport operations, to reduce the risk of a bird strike.
- Include the USDA Wildlife Services or a qualified airport biologist and the airport in the project design to include measures to reduce wildlife hazards.
- Definition of what would be considered an actionable hazard that will require mitigation, as well as examples of mitigation measure that could be implemented.
- A continual monitoring program (in perpetuity) that will be funded by the project proponent. The program should define monitoring results and bird density levels that would require mitigation action(s); establish roles and responsibilities for monitoring, mitigation, and notification of the proper airport contacts if bird densities or behavior increases the strike risk; and funding sources for both monitoring and mitigation.
- An agreement with a qualified airport wildlife biologist to review survey data to determine when mitigation is warranted and to work with the project proponents to determine the appropriate mitigation.
- That the project proponent commits to manage the area in a way that is consistent with the needs of the Airport (such as not managing the site as a quiet setting or preventing aircraft use of the area).
- Definition of actions the project proponent would take in the event the project creates a wildlife hazard for the Airport that cannot be mitigated.

Thank you for the opportunity to review the DEIS. If you have any questions or comments, please feel free to contact Ms. Janell Barrilleaux at 425-227-2611.

Sincerely,



Sarah Dalton
Airports Division Manager, Northwest Mountain Region

RESPONSES TO LETTER 22

Responses to Letter 22

Thank you for submitting comments representing the Federal Aviation Administration (FAA).

Comments 22.1: The FAA has concerns that the Draft EIS and Bird Aircraft Strike Risk Technical Memorandum state that there is currently a substantial risk for bird strike at the airport under existing conditions, and that a WHA completed for the Airport does not support this claim.

Response: The Joint Lead Agencies (JLAs) obtained a copy of the Provo Airport WHA on July 14, 2014, approximately 5 months after the Draft EIS was released. While the JLAs do not necessarily concur with all premises or conclusions of the WHA, nonetheless, text in our Final EIS has been revised accordingly as per your comment. Several meetings between the JLAs, Provo City and Provo Airport, Airport Wildlife Consultants, and Utah Valley University's Aviation Sciences Program (UVU) have occurred following the Draft EIS and WHA. Discussions of Provo Airport's WHA and UVU's bird strike data have been added to the Final EIS Chapter 3, Section 3.16.8.

Comment 22.2: FAA states that they do not require, but strongly recommend that aircraft strikes are reported.

Response: The text has been revised to say: "The FAA strongly recommends wildlife strikes to be reported and maintains a national database" (Chapter 3, Section 3.16.8).

Comment 22.3: FAA states the completed study only considered the potential abundance of birds and did not consider bird movement.

Response: The most quantitative portion of the impact analysis was based on bird abundance estimates under baseline and predicted conditions for each alternative (Chapter 3, Section 3.16.10). From the standpoint of the JLAs we believe it was and is important to document abundance of FAA-listed species in the study area and Provo Bay under baseline conditions, and to take a hard look at predicting changes in abundance associated with project alternatives. Methods generally were similar to those described by Cleary and Dolbeer (2005) for conducting Wildlife Hazard Assessments (WHA) for airports as required by the FAA. An important difference is that for conducting a WHA, Cleary and Dolbeer recommended sampling between 10 and 20 sites for 5 minutes each, at least twice monthly, for a year. For the EIS, we sampled fewer sites (four) for a longer period (two hours) monthly, for one year and quarterly (every three months) for one year. This greater length of time spent at a site allowed the observer to gain a better understanding of how birds used a site and to gain some insight regarding fly-over pattern and direction.

The impact analysis in the Draft EIS and the Final EIS does consider bird movements. The significance of movement by birds through the Provo Airport airspace has been included in an expanded section of the Final EIS (Chapter 3, Section 3.16.11). The

species-by-species discussion addresses potential implications on movement effects where appropriate. The Draft and Final EIS acknowledge the importance of the interaction of movement with abundance. In the conclusions to Section 3.16.11 the JLAs commit to monitoring both abundance and movement patterns as part of an adaptive mitigation strategy if an action alternative is selected for implementation. Since completion of the Draft EIS the JLAs have worked together with US Department of Agriculture's Animal and Plant Health Inspection Service – Wildlife Services group and developed a draft monitoring plan that includes a flight movement study to determine local bird abundances, flight patterns and frequencies through the Aircraft Operations Area (AOA). This monitoring effort will begin as soon as possible upon a decision to implement the proposed project, and continue through the life of the project or as determined necessary by airport-wildlife specialists. The goal of the monitoring and movement study will be to determine actionable threshold levels which, if exceeded in terms of increased levels of bird abundances and/or movements through the AOA due to the proposed project, would trigger an appropriate mitigation response by the JLAs and/or the June Sucker Recovery Implementation Program. The commitment may be carried out through agreement with Provo City, USDA-Wildlife Services, FAA, and/or others as appropriate. Text revisions have been added to or modified for the Final EIS, in Section 3.16.13.

Comments 22.4: The FAA states that the Draft EIS did not consider the potential bird strike risk that could occur during construction.

Response: The risk of bird aircraft strike during construction is somewhat speculative; however discussion of this concern has been added in Chapter 3, Section 3.16.12.

Comment 22.5: FAA states that it is difficult to predict how birds will use the site once the site is completed due to unknowns about several key factors.

Response: Predicted changes in bird abundance were determined by a team of specialists using a variety of available information including existing and original data, published scientific literature, communication and interaction with agency specialists, and seasoned, professional judgment. Chapter 3, Section 3.16.10 includes a detailed explanation of the process and assumptions used to predict bird abundances under each alternative. The Draft EIS included the following paragraph on p. 3-180:

“It is important to note that the exact acre estimates of predicted wetlands, associated bird habitats, and estimated bird abundances associated with the various project alternatives are best estimates based on a hard look at all available information. Actual habitat changes could be influenced by unknown factors such as unanticipated seasonal and annual variability in lake levels and/or flow rates as a result of unforeseen droughts and/or floods. Actual vegetation response to the restored hydrology of the study area (which is inclusive of a broader area than would be acquired and used for project purposes under any action alternative) is also influenced by such factors as watershed degradation, unanticipated weed infestations,

and the possibility of insects and diseases that impact vegetation; these factors can, in turn, influence actual bird abundance and species composition. Furthermore, anticipated proportions of predicted habitat that would become more like comparable surrounding areas where bird surveys were performed (Table 3-39) is not intended to indicate highly precise exact proportions. The proportions described in Table 3-39 are simply seasonal averages over highly variable climatic conditions with temperatures ranging from less than 0 to greater than 100 degrees Fahrenheit annually. The predictions made in this analysis are based on best professional estimates by a team of biologists, hydrologists, environmental analysts, and a GIS specialist using GIS tools, knowledge of the study area, and mapping products specifically developed for this project. It is acknowledged that this analysis is cumulative, i.e., the predicted wetlands and bird habitats are based on anticipated lake elevations and incoming streamflows over time. The proportions of predicted habitat that would become more like surrounding areas are dependent on the amount and depth of open water and the quality and quantity of wetlands. Ultimately, predicted bird abundances reported in this document are dependent on not only the quality of existing bird data but also the “best professional judgment” proportion estimates of predicted habitats (Table 3-39). Therefore, predicted bird abundances described in this document should be considered more as relative differences to be expected from the project alternatives rather than predictions of exact numbers.”

The four examples mentioned by FAA in Comment 22.5 are just several of the many types of factors taken into consideration by the specialists in conducting this analysis. However, no analysis of future conditions is absolute when involving natural ecosystems. The Draft EIS pointed out a list of similar limitations for this type of assessment. The Draft EIS further concluded that under certain circumstances, abundance increases could pose implications for public and aviation safety within the flight patterns of the Provo City Airport, which is in agreement with FAA’s comments that the Draft EIS is not conclusive in this regard. See response to FAA Comment 22.3 regarding commitments to implement a monitoring and mitigation program.

Comment 22.6: The Draft EIS should be revised to include a description of the WHMP process and how the proposed project may impact the ability of the Airport to implement the recommendations in their WHMP.

Response: A discussion of Provo Airport’s Wildlife Hazard Assessment has been added in Chapter 3, Section 3.16.8, and consideration of potential effects of the proposed project has been expanded in Section 3.16.11.

Comment 22.7a: FAA states that the areas surveyed included habitat that was substantially different from what is being proposed.

Response: Sampling habitats near the project area and near Provo Airport provided the most reasonable approach to obtaining data and insight useful for the analysis in the EIS. Obviously, it is not possible to survey bird abundances in a habitat such as is proposed by the project; if that precise habitat(s) existed, then the proposed project likely would not be needed. The survey of several discrete habitats within the project vicinity attempted to include the diversity of habitats currently existing in the project area in order to enable predictions of how bird abundances would respond to changes in habitat conditions brought by the project. Surveys of the restored Hobble Creek connection to Utah Lake's Provo Bay were also conducted; that restoration project is similar in many respects to the proposed project, although much smaller in scale. Nonetheless, these factors were considered by the team of specialists as predicted responses to proposed changes in habitat conditions due to the action alternatives were considered.

Comment 22.7b: FAA states that bird strike risk is not strictly correlated with an increase in bird populations; the analysis needs to consider bird types, location and previous strike information.

Response: The Draft EIS acknowledged this point in discussion on Page 3-179:

“In performing and reporting this analysis, a first-level assumption was made that an increase in abundance would equate to an increase in potential strike risk and, conversely, that a decrease in abundance would equate to a decrease in potential strike risk (i.e., a direct correlation). Therefore, this first-level analysis presents a worst-case conclusion; that is, by assuming a direct and positive relationship between increasing bird abundance and increasing potential risk, the analysis attributes maximum adverse effect (increased potential strike risk) to an increase in bird abundance. In actual fact, the increased abundance would create increased risk only if those birds were to occur within the flight path of aircraft using the Provo Airport, especially during landing and takeoff when the planes are at low altitude and low speed.”

The discussion of factors influencing strike risk continued on Pages 3-181, 3-182, and 3-187. The species-by-species discussion on pages 3-188 through 3-194 as well as the discussion on Pages 3-194 through 3-197 of the Draft EIS also addressed this point.

To supplement the limited reported strike data in the FAA database for Provo Airport (where 9 total bird strikes have been reported since 1993), and to provide context to the alternatives assessment with respect to bird types and location, additional bird strike data from UVU for Provo Airport (where 8 total bird strikes were reported in 2012-2013, with 5 of the 8 included in the FAA database) and from the FAA database for Salt Lake City International Airport from 1990 to 2013 (where 2,057 total bird strikes have been

reported since 1990) was obtained and reported in the Final EIS (Chapter 3, Section 3.16.8).

Comment 22.7c: The BAM model only used 2012 survey data and does not indicate what the risk will be once the project is completed.

Response: The BAM model was not used to evaluate the impacts of each of the alternatives based on feedback from USDA Wildlife Services and Provo City's airport consultant that the BAM model was not developed nor intended for the exact use we proposed. We did make some modifications to the BAM model (described thoroughly on Pages 3-170 to 3-171 of the Draft EIS). Nonetheless we did run the model on data collected in 2012, which characterized the risk to Provo Airport based on baseline bird abundance estimates as "Moderate." A drawback of this model is that the risk categories it determines and defines are so broad that they would not be particularly enlightening for the type of analysis we needed.

In response to comment 22.7c, the modified BAM model was applied for the Final EIS (Chapter 3, Section 3.16.10). This analysis using bird mass is simply another tool to determine relative differences in potential bird-aircraft strike risk between existing conditions and each action alternative.

Comment 22.7d: The analysis fails to capture how birds move throughout the area..., and if birds will use the site differently after project completion.

Response: The text of the Final EIS (Section 3.16) has been revised to more thoroughly address the points raised in this comment. See comment response 22.3.

Comment 22.8: FAA remains concerned about our ability to support the proposed project given the potential to create wildlife hazards for the airport..., therefore the FAA respectfully requests commitments be memorialized in a MOA for the Final EIS.

Response: Thank you for your recommendations and insight regarding FAA's ideas on the MOA and monitoring and mitigation plans, and suggestions regarding Records of Decision. The JLAs have worked with USDA Wildlife Services, Provo City, FAA and others to develop the specifics of the abundance and movement monitoring plan. The goal of the monitoring and movement study will be to determine actionable threshold levels which, if exceeded in terms of increased levels of bird abundance and/or movements through the Provo Airport airspace (AOA) due to the project, would trigger an appropriate mitigation response by the JLAs and/or the June Sucker Recovery Implementation Program. The JLAs commit to the monitoring and movement study and to implement mitigation measures for increased strike risk impacts of the project, if any. The JLAs will endeavor to formalize a cooperative relationship among the Provo City/Provo Airport, FAA, and USDA Wildlife Services through an MOA, and other agreements or contracts as needed to carry out the commitments.

COMMENT LETTER 23

5/16/2014

DEPARTMENT OF THE INTERIOR Mail - public comment-Moreno Robins



www.DOH.gov

public comment-Moreno Robins

marlin.christianson <marlinlance@yahoo.com>
Reply-To: marlin.christianson <marlinlance@yahoo.com>
To: Mingo Richard <rmingo@usbr.gov>

Wed, May 7, 2014 at 11:04 PM

23.1

May 7, 2014

We appreciate the willingness of the Mitigation Commission to work with local entities and landowners to create a win-win solution for the Provo River Delta Project.

We believe Plan B is a good solution to help preserve valuable prime farmland while still accomplishing the purposes of the delta project.

Plan B:

- 1) minimizes mosquito habitat.
- 2) Minimizes phragmites growth.
- 3) Minimizes duck and geese hazards.
- 4) Preserves prime farmland.

Thank you,

M. Moreno Robins
LaDonn Robins Christianson

RESPONSES TO LETTER 23

Responses to Letter 23

Thank you for submitting a comment using the project website comment form.

Comment 23.1: Moreno Robins and LaDonn Robins Christianson state their preferences for selection of Alternative B.

Response: Thank you for attending the public open house on April 2, 2014 and providing comments.

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COMMENT LETTER 24 (Page 1)



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

**MITIGATION COMMISSION
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PROJECT _____
FOLDER _____ CONTROL _____

MAY - 7 2014

MAY - 9 2014

Ref: 8EPR-N

Mr. Richard Mingo
Utah Reclamation Mitigation and Conservation Commission
230 S. 500 East Suite #230
Salt Lake City, Utah 84102

CODE	INITIALS
MTC-CE	

Re: Provo River Delta Restoration Project Draft
Environmental Impact Statement,
CEQ #20140051

Dear Mr. Mingo:

The U.S. Environmental Protection Agency Region 8 has reviewed the Draft Environmental Impact Statement (EIS) for the Provo River Delta Restoration Project developed by the Utah Reclamation Mitigation and Conservation Commission, the Central Utah Project Completion Act Office of the Department of the Interior and the Central Utah Water Conservancy District, collectively referred to as the Joint Lead Agencies (JLAs). Consistent with our authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, we have reviewed and rated this Draft EIS.

The Provo River Delta Restoration Project supports re-establishment of the June sucker (*Chasmistes liorus*), an endangered fish endemic to Utah Lake, by creating habitat suitable for juveniles. While this project alone has not been designed to remove the species' endangered status, it is an important step given the species' limited distribution. The Draft EIS identifies Alternative B as the preferred alternative because it minimizes the amount of private land necessary for acquisition while still enabling the river to develop an adequately sized delta ecosystem (p. ES-4). The EPA supports the project goal to improve habitat for aquatic life, including the June sucker, and provides the comments below for the JLAs' consideration in Final EIS development.

24.1

Monitoring and Adaptive Management

The Draft EIS does not include a plan to measure project success or to enable mitigation and management decisions to ensure that success. Since the project entails major channel reconfiguration, it will be important for post-project monitoring to include not only data to directly measure project purposes and goals such as June sucker recruitment, recreational opportunities and flow targets (p. ES-1), but also water quality and habitat succession, which are pertinent to the June sucker and overall ecosystem health. The EPA understands that other data collection efforts relevant to this project may be underway (e.g., those of the June Sucker Recovery Implementation Program, the Utah Division of Wildlife Resources, or the Utah Division of Water Quality) and, therefore, suggests that the monitoring plan focus on data that are not collected, or are not collected regularly

COMMENT LETTER 24 (Page 2)

enough, to evaluate this restoration effort. Accordingly, the adaptive management plan can describe how it will use data collected by other entities.

24.2

The Draft EIS indicates that dissolved oxygen (DO) in the lower Provo River can be problematic for fish and often does not meet water quality standards (p. 3-41). It will be important for post-project monitoring to include not only DO levels themselves but also water temperature, eutrophication indicators (nutrients, pH), and concentrations of oxygen-demanding compounds in order to identify what actions may improve DO and support the project goals.

24.3

The adaptive management plan will be more likely to enable timely decisions and project success if it identifies: specific thresholds for action in response to monitoring data, the actions to be taken, the responsible party for implementing identified actions, and the decision-makers to be involved. The Draft EIS identifies mitigation options for DO and water quality that include aeration, sediment dredging/capping and the development of a water quality task force that would fit into an adaptive management framework. Identification of what conditions or observations would lead to the JLAs recommending development of a water quality task force would be valuable in order to engage those entities at the most optimal time and for the appropriate reasons.

24.4

Recommendations:

- Develop a monitoring and adaptive management plan.
 - Identify actions or other measures to improve DO if the aerators are not able to improve DO to attain Utah water quality standards or support the June sucker or if project goals are not being met.
 - Identify thresholds for action.
 - Incorporate the water quality task force and other mitigation measures into the adaptive management plan.

Water Quality

24.5

Mitigation. Sufficient DO is important for aquatic life and the project goal of creating habitat for juvenile June suckers. The Draft EIS indicates that project mitigation will include installation of aerators to increase DO concentrations to levels that support fish in the lower Provo River. The JLAs are also considering two additional mitigation measures if aeration is not enough to improve DO: 1) temporarily dewatering the river and dredging or capping bottom sediments in order to reduce sediment oxygen demand, or 2) recommending development of a task force of local and state agencies to investigate the water quality problems. The Draft EIS does not include information describing how likely it is that aerators or dredging/capping will be sufficient to improve DO levels in the project area for fish such as the June sucker. An assessment of how much improvement can be expected from their implementation would provide understanding of how effective these mitigation measures are likely to be, how rigorously other mechanisms may need to be explored, and whether dredging/capping has enough potential benefit to be planned for during project construction in order to minimize the impact of de-watering after project construction.

24.6

Additionally, the Draft EIS identifies a number of factors that may be contributing to problematic dissolved oxygen levels beyond sediment oxygen demand: summertime conditions when flows are low and temperatures are high, stormwater runoff, and nutrients and sedimentation enabling overabundant algae and macrophytes (p. 3-40). These factors relate to other measures that may need to be undertaken by the JLAs or the water quality task force if aerators and dredging are insufficient to improve DO.

24.7

Recommendations:

- Estimate how much DO improvement can be expected from aerator use and dredging/capping
 - Collect sediment oxygen demand (SOD) data to confirm that sediments are the primary cause of low DO, develop a quantified estimate of how much of an effect the sediments have, and identify areas where sediment removal may be most effective.
 - Compare SOD to both water column DO and the loading of oxygen-demanding compounds from the Provo River source area in order to evaluate the potential benefit of dredging or capping.
- Consider other mechanisms (e.g., reduction of oxygen-demanding sources and nutrients, improving water temperature with increased shading) to increase DO concentrations.

24.8

Source Analysis for Oxygen Demand. The Draft EIS does not identify sources of oxygen-demanding compounds to the Provo River and Utah Lake. Any improvement associated with the removal (i.e., dredging/capping) of oxygen-demanding sediments may only be short-term, reduced by their re-accumulation if the sources of those sediments continue to discharge into the river at loads exceeding the available oxygen demand. Consequently, identifying the sources of oxygen-demanding compounds and their precursors (e.g., nutrients) could reveal additional mechanisms to improve and sustain DO levels. Monitored total phosphorus values in the lower Provo River exceed the Utah Division of Water Quality indicator values for total phosphorus, and algae can be overabundant to the point of affecting both habitat and DO (p. 3-40, p. 3-58). The Utah Division of Water Quality conducted a study of Utah Lake that may contain helpful information regarding both point and nonpoint sources to the Provo River. It is available at:

<http://www.waterquality.utah.gov/TMDL/#approved>

The EPA's Envirofacts website contains information regarding point sources permitted through the Utah Pollutant Discharge Elimination System:

<http://www.epa.gov/enviro/index.html>

24.9

Recommendations:

- Identify sources of oxygen-demanding compounds and nutrients within the source area contributing to the Provo River.
- Utilize this information in a monitoring, adaptive management and mitigation plan.

24.10

Assessment of DO criteria. Chapter 3 compares DO levels to the daily average minima of 4.0 and 3.0 mg/L for cold and warm water aquatic life, respectively, but does not include a comparison to the DO criteria for the “presence of early life stages” for the locations and time periods when juvenile June suckers will be present (Table 3-10). Because early life stages (e.g., juvenile June suckers) are expected to be present in the project area, adequate DO for early life stages is an important consideration.

24.11

Recommendation:

- Include an assessment of DO criteria for early life stages for baseline purposes and to support establishment of water quality goals and adaptive management thresholds.

Wetlands

24.12

Clean Water Act Section 404. The Draft EIS states that it is intended to serve as compliance for Clean Water Act (CWA) Section 404 permitting (Section 3.5). Accordingly, it provides wetland delineation; detailed evaluation of wetland area, function and types; and identification of the amount of fill within wetlands or within the Ordinary High Water Mark for some project components. These project components include the berm under Alternative C, the diversion dam under all alternatives and the additional dam under Option 2, and the partial removal of the Skipper Bay Dike. The Draft EIS does not identify total impacts from dredge or fill activities that will occur 1) within the jurisdictional canals in the project area or 2) in association with the excavation and creation of the new river channels in jurisdictional waters under all alternatives. More detailed information on project design in these areas, including fill and excavation footprints, would be useful to assess impacts and determine whether a 404 permit would be required for these activities. For example, it would be useful to understand where Alternative B’s proposed channel will be excavated in the southeastern portion of the study site, and how the existing jurisdictional canal in this area will be altered, as this change could have both direct fill effects and indirect effects on downgradient wetlands, including fens.

24.13

Recommendation:

- Provide more detail regarding the project’s design and dredge or fill of materials into jurisdictional canals and associated with the excavation and creation of the new river channel in order to completely identify impacts to Waters of the U.S. and support determination of whether a CWA Section 404 permit is necessary for these activities.

24.14

Water Quality. The water quality analysis indicates that impacts to Provo River and Utah Lake would be reduced due to the filtering and storage of pollutants in the wetlands within the project area (p. 3-60, 3-61). There is no similar discussion of the water quality impacts that could occur in wetlands, particularly related to the influx of sediments, metals, and phosphorous. The wetlands impact assessment focuses on the functional lift that would occur due to the improvements in hydrology and reduced agricultural impacts.

24.15

Recommendation:

- Consider any potential adverse effects of increased pollutant levels in wetlands due to the river re-route under all alternatives.

24.16

Channel Morphology

The Draft EIS indicates that the existing channel will receive 10-50 cfs of flow under all alternatives, but will no longer receive any high flow events. Potential impacts to channel morphology may occur due to the loss of these effective discharge events, including fine sediment accumulation, loss of channel complexity, and encroachment of riparian vegetation. Similarly, in the “Existing Channel Vegetation Community” section, there is no discussion of how loss of these high flow events could influence long-term riparian tree recruitment.

24.17

Recommendation:

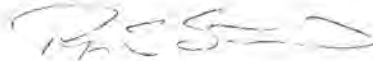
- Consider the effects of reduced high flow events to the existing channel’s morphology and vegetation.

Conclusion and Rating

Based on our review, and in accordance with the enclosed rating criteria, the EPA has rated the Draft EIS as “Environmental Concerns – Insufficient Information” (“EC-2”). The EC rating signifies that the EPA’s review has identified environmental impacts that should be avoided in order to fully protect the environment. The basis for the EC rating is that the EPA identified impacts that should be avoided or reduced. The “2” rating signifies that the Draft EIS does not contain sufficient information for the EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. Information is missing from the analyses for water quality, wetlands, channel morphology, and mitigation/adaptive management as outlined in our comments above. We recommend this information be incorporated into the Final EIS. A description of the EPA’s rating system can be found at: <http://www.epa.gov/compliance/nepa/comments/ratings.html>.

We appreciate the opportunity to participate in the review of this project. If we may provide further explanation of our comments during this stage of your planning process, please contact me at 303-312-6704, or Maggie Pierce, Lead NEPA Reviewer, at 303-312-6550.

Sincerely,



Philip S. Strobel, Acting Director
NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

RESPONSES TO LETTER 24

Responses to Letter 24

Thank you for submitting comments representing the U.S. Environmental Protection Agency.

Comment 24.1: EPA recommends that a monitoring plan be developed to measure project success and enable mitigation and management decisions.

Response: Restoring habitat conditions essential for spawning, hatching, larval transport, survival, rearing, and recruitment of June sucker on a self-sustaining basis will be the primary measure of project success. Section 2.10 of the Final EIS lists all of the environmental commitments, including near-term and long-term monitoring and management objectives for the project implementation area. Measures to avoid and minimize impacts would be implemented during final design of the project prior to construction, during the construction phase, and as long-term commitments for management of the project implementation area.

The proposed project is supported by the broader interagency June Sucker Recovery Implementation Program (JSRIP). Therefore, monitoring activities associated with June sucker recovery will be in coordination with the JSRIP. Ongoing management and maintenance funding for this project would be provided through annual commitments of funds from the JSRIP. Upon project implementation, the JSRIP, in cooperation with appropriate government representatives and stakeholders, would develop a detailed management plan that specifies the habitat developments, their management, and the public uses that would be permitted (Chapter 2, Section 2.6.6). Your recommendations can best be integrated at that time.

Comment 24.2 to 24.11: EPA recommends developing a monitoring and adaptive management plan for water quality, including identification of other actions/measures to improve Dissolved Oxygen (DO) if aerators prove insufficient to attain Utah water quality standards or to support June sucker/meet project goals. EPA also recommends that the Joint Lead Agencies estimate how much dissolved oxygen improvement can be expected from proposed measures, and that sources of oxygen-demanding compounds and nutrients within the source area are identified.

Response: The Joint Lead Agencies conducted additional studies regarding Sediment Oxygen Demand (SOD) to further understand causes of existing water quality problems in the lower Provo River and the feasibility of relying on aeration in the lower Provo River to maintain State water quality standards for DO (Goel et al. 2014, and Kling 2014). Results of the studies are summarized in Chapter 3, Section 3.4. Based on the study results and review of all available information, it was determined that diffused aeration using continuous non-turbulent laminar flow would significantly improve water quality in the “ponded” portions of the lower Provo River and meet the goal of maintaining State water quality standards for DO.

The following benefits are expected from aeration:

1. Aeration would stabilize DO concentrations throughout the water column and the sediment – water interface for all aquatic life. The water column would have a minimum of 5-6 ppm of DO during system operation and would eliminate constantly rising and falling DO levels. This reduces stress in fish and improves growth rates, vitality and overall health. Stable DO levels also increase aquatic insect populations (natural fish food) and natural populations of beneficial microbes, which can all be killed when the lower part of the water column is anoxic.
2. Aeration will provide a reduction in nutrients and suspended solids in the water column that can contribute to algae growth.
3. Aeration will provide a reduction in organic sediments and SOD, thus reducing the amount of muck that is currently on the river bottom and improving the condition of river sediments.
4. Aeration will eliminate stagnant areas of water and any odors resulting from stagnant conditions.

The feasibility to construct, operate, and maintain an aeration system in the lower Provo River was also evaluated.

Commitments for long-term water quality enhancement have been updated in Chapter 2, Section 2.10.3.

Comments 24.12 to 24.13: EPA recommends that the Joint Lead Agencies provide more detail regarding the project’s design and dredge or fill of materials into jurisdictional canals and in association with the excavation and creation of the new river channels. They note that Alternative B’s proposed channel would be excavated in the southeastern portion of the study site and that a jurisdictional canal is located in this area. EPA suggests that changes could have both direct fill effects and indirect effects on downgradient wetlands, including fens.

Response: The “jurisdictional canals” EPA is referring to have been updated on the Existing Wetland and Riparian Map (Figure A-18 in Appendix A) and are described as either an Emergent Ditch or just a Ditch depending on how it was delineated in the field by various delineations, and approved by the Corps. Ditches outside of the project implementation area will not be impacted, except for a small portion of a ditch within the acquisition boundary near where the proposed river channel would first split. This segment of ditch would be relocated outside the acquisition boundary adjacent to a property access road that would also have to be relocated (shown on Figure A-21 in Appendix A). The southern portion of the perimeter drain (ditch that runs along the eastern and northern perimeter of the study area) would be modified under Alternatives A and B (Figures A-18 to A-22) and would function as a side channel of the Provo River, terminating in the delta a little farther to the east than the main channel. This modification will remove remnant side-cast dredgings, and will restore hydrology to the existing nearby “fens” (raised peat mounds). Significant portions of this perimeter emergent ditch (or drain) will be partially filled to restore site hydrology and prevent it from draining the

raised peat mound wetlands along the entire eastern and northern portions of the project implementation area. Partial filling means that only the bottom of the “deep” ditch would be filled up to a level (approximately 4,490 feet) that provides the right hydrology to support emergent wetlands. These areas have been identified as potential Ute ladies'-tresses transplant locations if any occurrences need to be moved due to unavoidable impacts (see Chapter 3, Section 3.9). Portions of the emergent ditch in the middle of Alternative B would be excavated or filled to either become deep water (greater than 5 feet deep) oxbow features, lacustrine vegetated aquatic bed (2-5 feet deep) channel features, or partially filled to become part of the emergent wetland complex.

Comments 24.14 to 24.15: EPA recommends that the Joint Lead Agencies consider potential adverse effects of increased pollutant levels in wetlands due to the river-reroute under any action alternative.

Response: The water quality assessment (Chapter 3, Section 3.4) indicates that water quality is impaired in the lower Provo River from a combination of nutrient concentrations during summer low flow events and SOD resulting from deposition of organic matter that have accumulated on the lower 1.5 mile ponded portion of the river. This portion of the river is deep and lacks wind in the narrow corridor with high levee banks and tall riparian trees lining the existing channel. The restoration project would restore riffle pool sequences and floodplain connectivity in the riverine portion of the restored channel (to elevation 4,489 feet), and then spread out in the delta marsh, which would be exposed to wind and atmospheric exchanges of oxygen.

Additionally, the project includes increasing base flows from a variety of sources, particularly when water development projects of the Utah Lake System are complete. Specific to the Provo River, the Spanish Fork-Provo Reservoir Canal pipeline is slated for completion June 30, 2015 and it is anticipated that flows will be able to be delivered in 2016. Measures to improve water quality coming into the restored delta focus on supporting the development of a task force/study group to investigate the causes of poor water quality conditions in the lower Provo River and make recommendations for solving the problem. Vegetation in the delta wetlands is not expected to be negatively impacted by existing sediment, metals, and nutrient loads. In fact, sediment loads entering the delta are necessary (within reason) to restore natural deltaic processes and will help maintain a variety of rearing habitats for June sucker over time.

Comments 24.16 to 24.17: EPA recommends that the Joint Lead Agencies consider the effects of reduced high flow events to the existing channel’s morphology and vegetation.

Response: Reduced high flow events in the existing channel will not affect the existing channel’s morphology or vegetation. The existing channel is highly channelized and locked in place by riprap reinforcements with mature riparian vegetation that is primarily supported by groundwater. The water surfaces elevation will not change under Option 1 and will approximate “high flow” water elevations year-round under Option 2 (See Chapter 3, Section 3.6).

COMMENT LETTER 25 (Page 1)



State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
*Lieutenant
Governor*

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

KATHLEEN CLARKE
Director

May 7, 2014

Richard Mingo
URMCC
230 South 500 East #230
Salt Lake City, UT 84102

SUBJECT: Provo River Delta Restoration Project Draft EIS
RDCC Project Number 42622

Dear Mr. Mingo:

The State of Utah appreciates the opportunity as a cooperating agency to provide comments on the Draft EIS for the Provo River Delta Restoration Project. The Provo River Delta Restoration Project, designed to improve conditions for the endangered June sucker, will not only restore some of the historic habitat complexity of the Provo River Utah Lake interface and improve June sucker spawning opportunities, but also benefit the river and lake ecosystem in general.

Although any of the proposed action alternatives would be acceptable based on benefits to the June sucker and the natural stream environment, the State supports Alternative B because it would minimize the amount of private lands to be acquired while still providing adequate space for a naturally functioning river delta to achieve project objectives and the corresponding benefits for fish and wildlife habitat, public recreation, and water quality.

The State of Utah, Division of Forestry, Fire, and State Lands, under the Equal Footing Doctrine and by virtue of its sovereignty, owns the bed of Utah Lake as was determined by the Supreme Court in *Utah Division of State Lands v. United States*, 482 U.S. 193 (1987). The Division of Forestry, Fire, and State Lands (FFSL) has been in negotiation with individual landowners to establish a boundary line. In March 2013 the District Court issued a Memorandum Decision and Order declaring that all remaining unsettled properties will be set at 0.2 feet below the Compromise Elevation of 4,488.95 feet.

Sovereign lands are managed under multiple-use/sustained-yield principles and the Public Trust Doctrine as directed by statute. In order to meet this mandate, FFSL must ensure that all uses on sovereign lands are regulated such that protection of navigation, fish

COMMENT LETTER 25 (Page 2)

Richard Mingo
May 7, 2014
Page 2

and wildlife habitat, public recreation, and water quality are balanced against the economic necessity or benefit to be derived from any proposed use.

25.1

The Proposed Action will require access for construction activities on the bed of Utah Lake. A General Permit will be required from FFSL for these construction activities and any other work that will be conducted below the established boundary line in these areas. Further consultation and coordination with FFSL will continue as the project progresses to ensure management of the identified resource is in accordance with the Public Trust Doctrine. If you have any questions or need additional information please contact Tyler Murdock at 801.538.5453 or tmurdock@utah.gov. For a Special Use Lease, contact Laura Ault at 801.538.5540 or lauraault@utah.gov or contact Heather Church, FFSL's Sovereign Lands Coordinator based in Moab, at 435.210.0362 or hchurch@utah.gov.

25.2

As for the existing Provo River channel options, the Utah Division of Wildlife Resources (UDWR) recommends Option 2. If the existing channel is left unobstructed as outlined in Option 1, June suckers would continue to spawn unsuccessfully in the impacted, existing channel. This would waste reproductive energy which could be applied more successfully in restored habitats. UDWR has concerns regarding land ownership, monitoring, and ecosystem resilience over the long term. The land may be turned over to a land management agency or organization in an incomplete project condition, leaving inherited challenges for future management. UDWR recommends that success criteria, which stipulate funding obligations until goals are satisfied, be defined in the Final EIS.

25.3

These success goals would apply in particular to long-term management of weeds in the proposed restored delta. Appendix A of the Draft EIS states that "plant community surveys will be conducted in August of each year," but does not stipulate at what point these monitoring surveys would be concluded, if ever. It is recommended that a series of completion goals be outlined, and that a commitment be made to monitoring and adaptive management strategies, which would need to continue until the stated thresholds are met. If you have questions, please contact Matt Howard (801-491-5653), Habitat Biologist, in the UDWR Springville Office.

Thank you for the opportunity to review the Provo River Delta Restoration Project and provide comment. The State of Utah looks forward to working with the Utah Reclamation Mitigation and Conservation Commission. Please direct any questions regarding this correspondence to the Public Lands Policy Coordination Office at the address below, or call Sindy Smith at (801) 537-9193.

Sincerely,



Kathleen Clarke
Director

RESPONSES TO LETTER 25

Responses to Letter 25

Thank you for submitting comments representing the State of Utah.

Comment 25.1: Commenters from state agencies indicate that the proposed action will require access for construction activities on the bed of Utah Lake, and a General Permit from the Utah Division of Forestry, Fire, and State Lands (FFSL) would be required. Further consultation and coordination with FFSL should continue as the project progresses to ensure management of the identified resource is in accordance with the Public Trust Doctrine.

Response: The Joint Lead Agencies acknowledge that a permit could be required from FFSL (Chapter 1, Section 1.6), and concur that consultation needs to be on-going through design and implementation phases.

Comment 25.2: The Utah Division of Wildlife Resources (UDWR) recommends implementation of Option 2 for the existing channel, so that June sucker would not have access to the blocked existing channel, which may result in unsuccessful spawning/wasted reproductive energy.

Response: Concerns expressed by UDWR will be considered in selecting an option for the existing channel (Chapter 2, Section 2.5). Under Option 1, the existing channel of the lower Provo River would remain open to Utah Lake, but would offer relatively little suitable habitat for reproduction as the current channel is rather incised with uniform substrate composition and little habitat heterogeneity. Routing of peak flows to the proposed delta should result in environmental cues for spawning runs occurring in the restored delta area, rather than in the current Provo River channel (Chapter 3, Section 3.9.6).

Comment 25.3: The UDWR has concerns regarding land ownership, monitoring, and ecosystem resilience over the long term. They recommend that success criteria, which stipulate funding obligations until goals are satisfied, be defined in the Final EIS.

Response: Thank you for your recommendations. The proposed project is supported by the broader interagency June Sucker Recovery Implementation Program (JSRIP). It is anticipated that ongoing management and maintenance funding for this project would be provided through annual commitments of funds from the JSRIP. Upon project implementation, the JSRIP, in cooperation with appropriate government representatives and stakeholders, would develop a detailed management plan that specifies the habitat developments, their management, and the public uses that would be permitted (Chapter 2, Section 2.6.6). The Joint Lead Agencies fully anticipate that as a JSRIP Administration Committee member the Utah Department of Natural Resources will be among the participating agencies in this effort.

COMMENT LETTER 26

From: Squarespace <no-reply@squarespace.com>

Date: Fri, May 9, 2014 at 10:28 AM

Subject: Form Submission - New Form

To: rmingo@usbr.gov

Name: Russell Hopkinson

Email Address: russell.hopkinson@uvu.edu

Message: Provo River Delta Committee,

26.1

Bird and wildlife strikes are a significant safety hazards to aviation with over 10,000 event per year in the U.S. Almost every other risk in aviation can be managed, but birds remain in the skies and so do aircraft. 88% of all bird strikes in the U.S. occur below 1,500 feet above the ground (AGL). Aircraft takeoff and land at Provo airport and the paths of departure and arrival take us over and very near the proposed Provo River Delta project area below 1,500 AGL. During takeoffs and landings aircraft must operate very near the stall speed to safely land, and as they accelerate after takeoff. This slower speed leaves little to no maneuvering capability to the pilot if they see and need to move out of the bird's path. A pilot reduces speed and is stabilizing their aircraft at these slower landing speeds no later than about 1,000 AGL to the runway. A normal glide path means that an aircraft descends about 300 feet per nautical mile. Translated, the pilot is slow and in landing configuration no later than 3+ miles from the airport for smaller aircraft and further out for faster larger aircraft. This put aircraft in their most vulnerable condition right over and near the proposed wetlands where birds will be plentiful. Having a significant source of low flying, larger body mass (8+ pounds average) migratory birds on the north end of Provo airport would produce a significant risk increase to Provo Airport users. Local and migratory birds are already seen in the local Provo Airport area, but providing a permanent "home" for these larger birds will create a "permanent" risk that would be very difficult to manage or remove at a later date. Increased bird strikes can deter industry growth because of the real hazard associated with the risk. A single bird can destroy a modern jet engine costing between typically between \$1M and \$10M each (Boeing 777 engines are \$10M each). Birds regularly nest in the infields of airports, in and around hangar buildings, and many times build nests in aircraft openings, cowls, and inlets. Airports with increased bird hazards have tried to minimize the risk by hiring falcon handlers to "patrol" the airfield, installed "noise" cannons to move birds before aircraft are present, or even had to shoot or remove the risk altogether. These programs increase the cost of operating the airfield and operating aircraft. In conclusion, the long-term health of Utah Lake, Provo Airport, and Utah County are all connected. Ensuring a plan that allows all three to grow is vital and sometimes complicated. Awesome wetlands are wonderful until a large aircraft goes down in the lake or in the wetlands because a bird caused a crash. Then everyone loses, the lake, the airport, and the people. A balance of this project and the existing airport infrastructure are crucial. Thanks for the opportunity to hopefully add useful points to be considered as you move forward on this effort.

Russ

RUSSELL H. HOPKINSON, ,Director of Safety
Utah Valley University, Aviation Sciences

RESPONSES TO LETTER 26

Response to Letter 26

Thank you, Mr. Hopkinson, for submitting comments as the Director of Safety, Utah Valley University, Aviation Sciences.

Comment 26.1: Your comments provide relevant information, based on your qualifications and experience, regarding avian hazards to aircraft.

Response: The analysis provided in the EIS concludes that the abundance of various bird species is expected to increase or decrease (depending on the Alternative) in various seasons and localities if the proposed project is implemented. It further concludes that under certain circumstances increases could pose implications for public and aviation safety within the flight patterns of the Provo Airport. The Joint Lead Agencies therefore commit to implement an appropriate bird abundance and movement monitoring program, together with an adaptive hazard management program (Chapter 3, Section 3.16.13).

Additional analyses and discussion has been added in Sections 3.16.8 through 3.16.12 of the Final EIS. Additional details regarding the monitoring program are described in the Final EIS, Chapter 3 Sections 3.16.11 and 3.16.13.

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MAYOR'S OFFICE
TEL 801 852 6100
351 W CENTER ST
PO BOX 1849
PROVO, UT 84603

May 12, 2014

Mr. Richard Mingo, Project Coordinator
Utah Reclamation Mitigation and Conservation Commission
230 south 500 East, #230
Salt Lake City, UT 84102

Subject: Provo City comments regarding the Draft Environmental Impact Statement for Provo River Delta Restoration Project

Dear Mr. Mingo:

27.1 Attached are comments based upon Provo City's review of the Draft Environmental Impact Statement for the Provo River Delta Restoration Project. We appreciate the short extension for submission of our comments, subsequent to Mark Holden's presentation to the Provo Municipal Council on May 6th.

The attached comments have been prepared by the Provo City Public Works Department, in coordination with the Mayor's Office and other Provo City Departments. Areas of agreement are acknowledged. Understandably, most of these comments address issues and concerns which remain to be fully resolved.

27.2 Provo City has appreciated the opportunity to work as a Cooperating Agency during the EIS process for this Project over the last several years. We believe that the efforts of the Joint Lead Agencies and the iterative nature of the process with various stakeholders has yielded a result which will fulfill the Project objectives and can avoid or mitigate Project impacts.

27.3
27.4 Hopefully, the completion of the Environmental Impact Statement and subsequent Record of Decision will not be the end of these coordination activities. Our desire is that this Project be something that not only protects an endangered fish and facilitates ongoing water development, but also is recognized by the local community as something that has maintained public safety, transportation facilities and recreational amenities at existing levels, or better.

Thank you for your ongoing efforts to address and resolve the attached comments.

Sincerely,

A handwritten signature in black ink, appearing to read "John R. Curtis".

John R. Curtis
Mayor

PROVO.ORG

**PROVO RIVER DELTA RESTORATION PROJECT
Draft Environmental Impact Statement**

Provo City Comments
May 7th, 2014

Summary

Provo City recognizes the responsibility that the Joint Lead Agencies (JLAs) have to balance the diverse interests and objectives associated with implementing this Project. We have appreciated the opportunity to review and make comment as a Cooperating Agency throughout the Environmental Impact Statement (EIS) process.

27.5 The efforts by the JLAs to consider the interests of the property owners most directly impacted by the proposed action are appreciated. Provo City endorses Alternative B, which has resulted from the iterative process of working with the property owners, as the preferred choice of the action alternatives.

27.6 Provo City also appreciates the efforts by the JLAs to accommodate the preferred alignment for the proposed Lakeview Parkway and Trail through the Study Area; as well as those to maintain a safe, through access for Boat Harbor Drive between the existing, and future Provo River alignments. Ongoing communication and coordination will be required through the design phase to ensure that this Project does not cause an increase in the construction cost of the Lakeview Parkway and Trail.

The following comments will address impacts of the project with some outstanding concerns to Provo City. Most of these are reiterated, or updated comments from earlier reviews.

Existing River Channel

27.7 The long term nature and condition of the abandoned section of river channel is very important to Provo City and its citizens. The desire is that it continue to be an aesthetic and recreational asset, and that it not deteriorate into something that becomes a nuisance or liability.

The JLAs have made commitments to provide minimum flows (10 - 50 cfs) and aeration mechanisms in the abandoned channel section. These commitments are appreciated, and it is hoped that they will be successful in maintaining the aesthetic character and recreational value that is currently enjoyed along the existing lower Provo River channel.

However, the long-term success of these efforts is not certain, and there will likely be some unanticipated negative impacts resulting from such a dramatic reduction in the overall magnitude of water flowing through this section of the existing channel.

The focus in the EIS process thus far has been on the beneficial difference between the minimum

COMMENT LETTER 27 (Page 3)

27.8

The focus in the EIS process thus far has been on the beneficial difference between the minimum 10 cfs flow, which will be provided, relative to the single-digit flows that occur for several weeks during most summers. Less attention has been given to the **cumulative effects over time of never seeing more than 50 cfs along this abandoned section of the river**. The benefits of the periodic high flows, associated with storm events and spring runoff, will no longer be available to this abandoned section of the river.

- Will the extended periods of low water flow in the existing channel also extend the periods of low oxygen levels?
- Will existing mature trees along the river trail be impacted?
- What type of vegetation will take over where water used to flow?
- Will initial aeration methods be effective?
- What unintended negative impacts may appear?

It is recognized that answering these questions now with certainty is not possible. What the nearby property owners and citizens of Provo need from the JLAs is a recognition that **mitigating the impacts of the proposed action on the existing river channel will require iterative measures, and a more firm commitment** (directed to the outcome, not just a process) to the ongoing effort that will be necessary to achieve long term success. See Section 2.10.3.

27.9

Provo City agrees that further analysis is needed to fully determine whether Option 1 or 2 will be better at achieving the aesthetic, water quality and recreational objectives for the abandoned section of river channel. At this point, Option 2 appears better suited to accomplishing those goals. Preventing “back flows” of high water and carp migration from Utah Lake into this low-flow linear pond would appear to be important from water quality and aesthetic standpoints.

Aircraft-bird Strike Risk

27.10

The potential impact on the safety of flight operations at the Provo City Airport is another issue of vital concern to Provo City. It is recognized that predicting the magnitude of the impact on Aircraft-bird Strike Safety is difficult. **Provo City does not concur with the EIS representation (Table S-1) that the Preferred Alternative will result in a “Decrease in total bird abundance and corresponding decrease in strike risk.”** The EIS itself (3.8.9) states that the proposed action will “promote a healthy breeding population and support migrant populations seeking stopover habitat.”

On the surface, it would certainly appear that an increase of hundreds of acres of open water and wetlands will also result in a related increase in bird activity, along with the associated increase in an aircraft-bird strike risk. As noted in the EIS (3.16.10), “a thorough bird assessment of this type (3-D airspace) is only possible if/when the project is in place.” Nothing close to a consensus on what is likely to happen has yet been achieved between the JLAs and the Provo Airport stakeholders as of yet.

27.11

The proposed development of a monitoring and mitigation program appears feasible. Keys to an **acceptable mitigation program** from Provo City’s standpoint is that it **must be outcome based**

COMMENT LETTER 27 (Page 4)

(no related reduction in aviation safety), not just a process; and the JLAs must accept financial responsibility for mitigation of any actual increase in bird-strike risk.

27.12 Mosquitos

This could be the issue that does more to form public perception regarding this Project, at least in the nearby residential neighborhoods, than anything else. The Communication and Education component of your Management Plan may be the most important part. You may want to consider a website and social networks as part of your public information endeavors.

27.13 Wetland Mitigation Site

The commitment by the JLAs to “keep whole” the credits associated with Provo City’s wetland mitigation site is appreciated (3.5.8). Nevertheless, it would be preferable to have some communication from the Corp of Engineers verifying the absence of concern, or identifying the circumstances under which some problem or risk may arise. This mitigation site is an important asset, which Provo does not want to see impaired or diminished by the proposed action.

Existing Levee/Flood Risk

27.14 The EIS provides an excellent description of the analysis that has been completed to document that flooding risk is not increased anywhere outside the project area. While this may be theoretically correct from a modeling standpoint, the operational realities and practical impacts of leaving the existing flood control levee a half-mile away from the relocated channel are completely ignored.

The most significant of these impacts is that in a high water situation, the existing river levee would become more of a lake levee; with different, and more significant wave action considerations. Additionally, from an operational standpoint, the existing river/levee configuration allows for monitoring, “testing”, and effective maintenance work to occur during less-than-design-level events. As noted in the EIS, the factor of safety of the existing levee is already marginal during a “100-year” event (3.2.4).

A result of the Project would be that the only time the existing levee would be operational, would be during a nearly 100-year event; with little time to prepare, or to respond. This risk increases with time, as responders will have no institutional knowledge of the levee system. A **clear and foreseeable indirect impact of the proposed action** will be that property owners, businesses and residents of Provo **will be made more vulnerable to the risk of flooding** (operationally and practically, if not theoretically) by the lack of operational opportunities to maintain and enhance this existing levee system.

If these Project impacts could be adequately mitigated without relocating the existing levee, along with rest of the river, concerns still exist with the south bank of the river in the area of the diversion. The turbulence created by diverting the river out of its historical path raises concerns with bank stability, elevation (4498 is not high enough in this area) and configuration.

27.15

Construction Sequencing

A number of very complicated challenges exist near the proposed river diversion location, associated with the sequencing of Project construction; while simultaneously accommodating local transportation needs, flood control requirements, trail access and environmental objectives. These challenges should be acknowledged, and potential methods for addressing them should be identified.

Recreation Opportunities

27.16

Provo City looks forward to the ongoing coordination and cooperation with the JLAs regarding the “additional details for improving the condition of the existing channel” which “would be incorporated during final design” (3.15.6). We agree “that many of those elements are best determined at the next level of design” (3.15.8).

The EIS states that “there would be improved parking/access to existing channel” (Table S-2). While this is visible with Alternatives A & C, where this would occur under the Preferred Alternative is not clear. A suggestion would be to consider the property to be acquired between Lake Shore Drive and the existing river channel, north of the realigned Boat Harbor Drive. This may be a good location for some parking, trail access across the small diversion dam, picnic facilities and possibly some public information displays.

Earlier concepts of the proposed action included a trail along the northern boundary of the Project. This appeared to be one of the higher quality recreational amenities to the Project. Even if this option is not constructed until the Lakeview Parkway Trail is completed, including this trail as part of the EIS document may minimize future regulatory issues.

A 10-foot wide trail along the berm, with 3-1 side slopes (3.1.3), will require much more than a 30' footprint in many places, particularly near the west end. For example, the cross-section for the proposed trail in Figure 3-26 will require a footprint of 45 feet.

RESPONSES TO LETTER 27

Responses to Letter 27

Thank you for submitting comments representing Provo City.

Comments 27.1 to 27.4: Mayor Curtis submits comments based upon Provo City’s review of the Draft EIS (27.1). He states that the City has appreciated the opportunity to work as a Cooperating Agency (27.2), and hopes that coordination activities will continue beyond the Record of Decision (27.3). The Mayor states that it is the City’s desire that the project “be something that not only protects an endangered fish and facilitates ongoing water development, but also is recognized by the local community as something that has maintained public safety, transportation facilities and recreation amenities at existing levels, or better” (29.4).

Response: The Joint Lead Agencies (JLAs) thank Mayor Curtis, City Council members, and representatives of Provo City Departments for their participation in the EIS process. Representatives of the JLAs share the City’s desire to foster an ongoing working relationship and level of coordination and cooperation that will result in a successful project. The JLAs have been and are committed to continue working in cooperation with Provo City, Utah County, FAA, Wildlife Services, and others to assure that the project either improves or does not adversely impact public safety, transportation facilities, and recreation amenities in the area.

Comments 27.5-27.6: Provo City appreciates the efforts by the JLAs to consider interests of the property owners and to accommodate the preferred alignment for the proposed Lakeview Parkway and Trail through the study area.

Response: Thank you for your comment.

Comment 27.7 and 27.8: The long term nature and condition of the abandoned section of river channel is very important to Provo City and its citizens...

Response: Thank you for the comment regarding potential cumulative effects of altered flow regimes in the remaining Provo River channel. The JLAs conducted additional studies regarding Sediment Oxygen Demand (SOD) to further understand causes of existing water quality problems in the lower Provo River and the feasibility of relying on aeration in the lower Provo River to maintain State water quality standards for DO (Goel et al. 2014 and Kling 2014). Based on the study results and review of all available information (including data from UDWQ), it was determined that diffused aeration using continuous non-turbulent laminar flow would significantly improve water quality in the “ponded” portions.

Kling (2014) in his feasibility analysis of aeration in the lower Provo River describes the following benefits that are expected from aeration:

1. Aeration would stabilize DO concentrations throughout the water column and the sediment – water interface for all aquatic life. The water column would have a minimum of 5-6 ppm of DO during system operation and would eliminate constantly rising and falling DO levels. This reduces stress to the aquatic community and improves growth rates in fish, vitality and overall health. Stable DO levels also increase aquatic insect populations and natural populations of beneficial microbes, which can all be killed when the lower part of the water column is anoxic.
2. Aeration will provide a reduction in nutrients and suspended solids in the water column that can contribute to algae growth.
3. Aeration will provide a reduction in organic sediments and SOD, thus reducing the amount of muck that currently exists on the bottom of the channel and improving the quality of river sediments.
4. Aeration will eliminate stagnant areas of water and any odors resulting from stagnant conditions.

The feasibility to construct, operate, and maintain an aeration system in the lower Provo River was also evaluated. The long term commitments in Section 2.10.3 for water quality were updated accordingly for the Final EIS.

Dredging the organic-rich sediment layer at the bottom of the existing channel is likely not necessary to maintain State water quality standards for DO. However, portions of the organic-rich sediments will likely be removed during construction as the aeration system is installed. Other aesthetic improvements to the existing channel could also be made at that time. The JLAs will coordinate with Provo City and Utah County in this regard during the final design phase.

The JLAs continue to recommend that State and local governments and organizations develop a task force/study group to investigate sources of fine organic matter, nutrients, and other pollutants in the watershed that may degrade water quality conditions in the lower Provo River. The JLAs would participate with and support the efforts of such a group if it is formed.

Furthermore, the existing channel is highly channelized with mature riparian vegetation that is primarily supported by groundwater. The water surfaces elevation will not change under Option 1 and will approximate “high flow” water elevations year-round under Option 2. Existing mature trees along the river trail will not be impacted, except in small areas to accommodate the diversions/dam (see Section 3.6).

Comment 27.9: Provo City agrees that further analysis is needed to fully determine whether Option 1 or 2 will be better at achieving the aesthetic, water quality and recreational objectives.

Response: The aeration feasibility study performed following the Draft EIS (Kling 2014) indicated to the JLAs that the effectiveness of aeration is better in deeper water and in ponds with greater retention time. Option 2 provides better conditions for aeration and would potentially require fewer diffusers and/or less air flow and energy consumption compared to Option 1. Section 3.4 of the Final EIS was updated to include these results.

Comment 27.10: Provo City does not concur with the EIS that the Preferred Alternative will result in a decrease in total bird abundance..., and that nothing close to a consensus on what is likely to happen has yet been achieved between the JLAs and the Provo Airport stakeholders.

Response: Thank you for the comment. The JLAs stand by the analyses reported in Section 3.16 of the Draft EIS, and as expanded upon in the Final EIS. Section 3.8 addresses predicted effects of the project on “wildlife” in general, including birds. Section 3.16.10 addresses the impact analysis and conclusions regarding potential effects of alternatives on bird species categorized as the most hazardous to aircraft by the FAA, and therefore on potential bird-aircraft strike risk. The Final EIS also includes an analysis of total bird mass in addition to total abundance, as both are important to determine impacts to airport safety.

However, the JLAs are aware of the concerns Provo City, the FAA and others have expressed regarding the potential of the project to increase the bird-aircraft strike risk at Provo Airport. The JLAs have committed to an ongoing monitoring plan and bird movement study, together with an adaptive mitigation plan, if the project is implemented. The JLAs anticipate working through the details of the monitoring and mitigation program as a partner with Provo City, FAA, and Wildlife Services in the future.

Comment 27.11: Provo City believes that a monitoring and mitigation program appears feasible, but it must be outcome based with no related reduction in aviation safety, and the JLAs must accept financial responsibility for mitigation of any actual increase in bird-strike risk.

Response: The JLAs concur that the intent of the monitoring and mitigation program is to have no related reduction in aviation safety due to the project. The JLAs and the June Sucker Recovery Implementation Program will provide funding for monitoring and for mitigation measures.

Comment 27.12: Mosquitos are a big issue, especially in the nearby residential neighborhoods, and the communication and education component of the Mosquito Management Plan might be the most important part.

Response: Thank you for the suggestion to use social networks and a website as part of the public information endeavors. The JLAs recognize that mosquitos are a big issue throughout the study area. Communication and education will be an ongoing cooperative effort among Utah County Health Department, the JLAs, and others.

Comment 27.13: Provo City's wetland mitigation site is an important asset, which Provo does not want to see impaired or diminished by the proposed action.

Response: Thank you for the comment. Either Alternative A or B would incorporate the mitigation site into the larger restoration project and therefore enhance it. The JLAs are willing to participate in discussions with Provo City and the US Army Corps of Engineers regarding Provo City's wetland mitigation site at an appropriate juncture.

Comment 27.14: Provo City is concerned that the existing south river levee would become more of a lake levee, with different and more significant wave action considerations. Additionally, the existing river levee configuration allows for monitoring, testing, and effective maintenance work during less-than-design-level events.

Response: Thank you for the comment. Currently, the lower 1.5 miles of the south levee acts as a river and lake levee, depending on flows in Provo River and water levels in Utah Lake. With implementation of any action alternative and the associated rerouting of Provo River peak flows in into the delta, the existing south levee downstream of the new diversion would act primarily as a lake levee without the need to contain peak river flows. At lake levels of the 10–100-year flood, the western portion of Boat Harbor Drive and the north levee are overtopped under existing conditions, thus making the south levee a lake levee every 10 years on average. The proposed project would have no effect on that situation; at high lake levels the south levee is already a lake levee and subject to long periods of standing water and wave action.

However, the segment of river upstream of the UDWR fish weir (XS 18 shown in Appendix A, Figure A-12) historically experiences higher water levels from peak flows in the Provo River. Peak flows in the Provo River have caused water levels to nearly overtop the levee during previous floods, sometimes exceeding 4,498 feet at the river bend near XS 22 (Appendix A, Figure A-12). With river flows being diverted to the north under any action alternative, this segment of the south levee would not experience the same high water levels or be tested during high-flow situations; it would only need to contain high lake levels that are 3–4 feet lower along this segment of the levee during a 100-year flood event.

The proposed project would not interfere with Provo City's access or ability to maintain the south levee. However, because the proposed project would lower flood stage on a

portion of the south levee, routine operation and maintenance activities that Provo City is currently implementing might become less of a priority in the future, which is a current staff concern. During the proposed project planning process, Provo City requested consideration of ways to temporarily provide higher water surface elevations in the existing channel to allow examination of the south levee under high water conditions. Under either Option 1 or Option 2, the JLAs would coordinate with Provo City during final design and construction of the existing channel to provide opportunities to periodically and temporarily raise water levels for the purpose of testing the structural integrity of the south levee for operation and maintenance purposes. Strategies will be sought to raise water levels in the existing channel where possible without flooding adjacent properties or impacting other uses/users of the existing Provo River corridor.

Under existing conditions at XS 28.5 (Appendix A, Figure A-16) the north dike is overtopped at 100-year flood elevation modeled for Provo River. The project would not fix this existing problem because the flooding occurs upstream of Lakeshore Drive. None of the project action alternatives are designed to change any FEMA flood zones.

Comment 27.15: Provo City raised concerns regarding construction sequencing and requested that methods for addressing local transportation needs, flood control requirements, trail access, and environmental objectives be identified.

Response: The JLAs would coordinate extensively with Provo City, Utah County and others during final design, prior to construction, and during construction to address these sequencing issues.

Comment 27.16a: Provo City looks forward to ongoing coordination and cooperation with the JLAs regarding the additional details for improving the condition of the existing channel.

Response: Thank you for your comment. The JLAs also look forward to continued coordination and cooperation if an action alternative is selected for implementation.

Comment 27.16b: Provo City identifies the property to be acquired under Alternative B between Lakeshore Drive and the existing river channel, north of the realigned Boar Harbor Drive, would be a good location for parking and trail access.

Response: The JLAs met with Provo City and Utah County following the Draft EIS to discuss this potential additional parking location in addition to many other items that needed further coordination. In the Final EIS all of the alternatives were updated to identify this portion of the acquisition area for equestrian parking and trail access (Chapter 3, Section 3.15). Provo City indicated that equestrian parking at this location would help them accomplish their goal of making the south levee, Provo Airport Dike, the remaining portions of Skipper Bay Dike, and the proposed berm(s) included in the project action alternatives more accessible for equestrian uses.

Comment 27.16c: Provo City would like the trail along the northern boundary of the project that was included in earlier concepts, to be included in the Final EIS.

Response: Earlier concepts of the delta restoration project included a berm and trail around the east and northern boundary of the project implantation area. It was determined before the Draft EIS was completed that this berm was unnecessary so it was removed in the Draft EIS. The potential for this trail was discussed following the Draft EIS with Provo City and Utah County and the JLAs are including an “at grade” trail along the northern boundary of the project area in the Final EIS for Alternatives A and B. This portion of the study area is not included in the Alternative C acquisition boundary.

This trail would not be designed to the same standard as the new berm and trail because a trail using that design standard would cause impacts to existing wetlands. The new northern trail would be located on uplands. It would be built between the proposed Lakeview Parkway and Trail and northern extent of Skipper Bay Dike trail, and would include a viewing tower which would be built on the existing Skipper Bay Dike. Access would likely be from the proposed Provo Lakeview Parkway and Trail because there is very little non-wetland habitat available for parking in this area within the acquisition boundary for project Alternatives A and B. This trail segment would not be constructed unless/until the Provo Lakeview Parkway and Trail is constructed. The trail segment is not proposed as a component of Alternative C because property would not be acquired by the federal government in that portion of the study area under Alternative C.

Comment 27.16d: Provo City questioned the 30-foot berm footprint described in the Draft EIS.

Response: The berm footprint will vary depending on its location and height above existing grade. Provo City is correct that the berm cross section shown in Figure 3-26 in the Draft EIS would have a 47-foot base using typical 3-1 side slopes as described in the Draft EIS. Meetings were held with Provo City and Utah County following the Draft EIS to discuss recreation plans, and as a result, modifications to the proposed trail and berm design were made to include an unpaved trail intended for equestrian uses. This trail will simply be a bench that will be cut into the side slope of the new berm. It is anticipated that this feature will increase the berm and trail footprint by approximately 4 feet. The berm design for the Final EIS has been updated to include the equestrian trail.

COMMENT LETTER 28

From: Lorig, Rebecca <rebecca_lorig@fws.gov>
Date: Thu, May 15, 2014 at 3:48 PM
Subject: Re: Provo River Delta Restoration Project Draft EIS Comments
To: Richard Mingo <rmingo@usbr.gov>

Hi Richard,

I would like to provide a few comments on the draft EIS document, however, they are not substantial in nature. See below.

28.1

I was primarily interested in the project components as they relate to June sucker, and my comments are associated with pages 3-125 and 3-126. Under the Affected Environment section specific to the old channel, the language about June sucker entrainment in the old channel (option 1) says there is limited connectivity to the old channel and larvae/juvenile June sucker would only drift into the old channel by chance, but under option 2 (p. 3-126) it says that "the majority of June sucker larvae would be transported with the main flow of the river into the restored delta." I was not sure that under both options the risk of larval entrainment into the old channel is the same, the way it currently reads is not clear that this is the case. Perhaps it would differ based on differing flows for each option? I would also like to know the likelihood that larvae could become entrained; is it only a possibility during releases at the dam outlet? Do you know the design of the outlet yet to determine if it will minimize this entrainment risk?

Thank you for allowing us to comment on the document. Please contact me if you need clarifications on the comments I provided.

-Becky

RESPONSES TO LETTER 28

Responses to Letter 28

Thank you for submitting a comment representing the U.S. Fish and Wildlife Service.

Comment 28.1: The USFWS would like to know the likelihood that June sucker larvae could become entrained into the existing channel under Options 1 and 2.

Response: There would be no difference in transport of drifting June sucker larvae from Provo River into the old channel between Option 1 and Option 2 under the project. The facilities to divert/bypass the 10 to 50 cubic feet per second minimum flow into the old channel would be identical under either option. The facility has not been designed yet, but USFWS would be invited to participate in the design so their input and that of other June Sucker Recovery Implementation Program (JSRIP) members would help design a facility that would minimize June sucker larvae entrainment risk. Similarly, the dam outlet required under Option 2 has not yet been designed beyond a conceptual level but USFWS and other JSRIP members would be invited to participate in the design process. Though the project would have overall net benefits for June sucker and is anticipated to contribute significantly toward downlisting and eventual delisting of the species, the determinations of effect (Chapter 3, Section 3.9) and the Biological Assessment have been updated with a finding of “may effect, likely to adversely affect” based on the potential for a small number of larvae and/or young fish most vulnerable to predation to drift into the existing channel and not survive.

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COMMENT LETTER 29 (Page 1)



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

May 13, 2014

REGISTRATION COMMISSION
OFFICIAL FILE COPY
CLASSIFICATION _____
PROJECT _____
FOLDER _____ CONTROL _____

MAY 14 2014

Regulatory Branch (SPK-2010-01394-UO)

CODE	INITIALS
mc-01	MW

Mr. Michael Weland, Executive Director
Utah Reclamation Mitigation and Conservation Commission
230 South 500 East, Suite 230
Salt Lake City, Utah 84102-2045

Dear Mr. Weland:

As a Cooperating Agency for the Provo River Delta Restoration Project Environmental Impact Statement (EIS), we appreciate the opportunity to provide comments regarding the Draft EIS as it relates to our Corps permitting process for the Department of the Army under authority of Section 404 of the Clean Water Act.

We reviewed the Draft EIS, dated February 28, 2014. We understand that the proposed project intends to relocate the existing main stem of the Provo River into a new channel and would restore a delta complex. This project is designed to best suit June sucker spawning and rearing needs commensurate with the recovery plan for this fish species.

Based on our review of the DEIS, we are providing the following comments:

29.1

The tables in the Executive Summary (Table S-1) and Chapter 2 (Table 2-3) do not show the linear footage or acreage of impacts below the ordinary high water mark (OHWM) from the diversion structure. Please include these numbers in the tables and where appropriate throughout the document. This will aid us determining which permitting method is most appropriate for this project.

29.2

Please clarify what entity will be responsible for the long-term management of the project or if the project is intended to be turned over to another entity at some future time.

29.3

Two permitting options appear possible for this project, either a Nationwide Permit (NWP) 27 or an individual permit. However, the NWP program only authorizes no more than minimal impacts to aquatic resources. We are concerned that rare or unique wetland habitats may be adversely impacted by this project. We have concerns that Alternatives A and B may result in an adverse impact to the peat bogs/fens.

COMMENT LETTER 29 (Page 2)

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29.4

It appears that the average water elevation of Utah Lake is approximately 4487 feet. Within the project area, there are rare and sensitive peat bog/fen wetland habitats that it appears would be inundated on an almost permanent basis except in low water years. This would change the wetland type and have an adverse effect to the functions and services of this habitat. Figure A-10 indicates the topography of the fen areas which appears to be 4486-4487.5 in elevation. However, the text in the document indicates that these areas are 2-3 feet higher than the surrounding areas. The statements and the figures contradict one another. Please clarify the discrepancy.

29.5

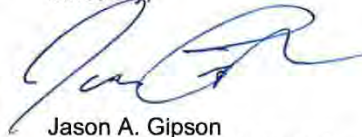
As we understand it, the elevation of the breaches in the dike separating Utah Lake from the project area would be 4487 feet at their lowest point. If this is correct, this would have the effect of the dike acting as a control point and impounding water within the project area to that elevation. This would result in a year-round water elevation of 4487 feet and would not allow the water surface elevation to fluctuate lower than that elevation. Also, if Utah Lake surface elevation were to drop below 4487 feet, the dike breach design would prevent June sucker or any fish species from entering the restoration area from Utah Lake. If the dike breach elevations are lower than 4487 feet, that detail should be clarified.

29.6

If carp are allowed to enter the restoration site, they may cause damage to the existing and restored wetlands by uprooting vegetation as they have done throughout Utah Lake. We are aware of the existing carp removal efforts in the open water portion of Utah Lake. However, once the Carp move into the wetlands areas, removal will be much more difficult. What is the management plan with regard to removal of Carp once the species has entered the wetlands areas?

Thank you for the opportunity to comment on the DEIS. Please refer to identification number SPK-2010-01394-UO in any correspondence concerning this project. If you have any questions, please contact Mike Pectol by telephone, 801-295-8380 ext. 15, by email at Michael.A.Pectol@usace.army.mil, or at the Utah Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010.

Sincerely,



Jason A. Gipson
Chief, Utah-Nevada Branch
Regulatory Division

cc:

Richard Clark, EPA Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129
Mark Holden, URMCC, 230 South 500 East, Suite 230, Salt Lake City, UT 84102

RESPONSES TO LETTER 29

Responses to Letter 29

Thank you for submitting a comment letter representing the U.S. Army Corps of Engineers (Corps).

Comment 29.1: The Corps requests that linear footage or acreage of the diversion structure be provided.

Response: The Joint Lead Agencies have not yet developed a specific design for the diversion structure or the dam that would be created under Option 2 for the existing channel. These structures would only be developed to a higher level of design following a Record of Decision; however, each structure would need to be no larger than a footprint of about 100 feet long and 100 feet wide. This would result in a combined maximum footprint of 0.4-acre for the two structures below the ordinary high water mark.

Comment 29.2: The Corps requests that the Joint Lead Agencies indicate what entity will be responsible for long-term management of the project.

Response: The proposed project is supported by the broader interagency June Sucker Recovery Implementation Program (JSRIP). It is anticipated that ongoing management and maintenance funding for this project would be provided through annual commitments of funds from the JSRIP. Upon project implementation, the JSRIP, in cooperation with appropriate government representatives and stakeholders, would develop a detailed management plan that specifies the habitat developments, their management, and the public uses that would be permitted (Chapter 2, Section 2.6.6).

Comment 29.3: The Corps indicates that two permitting options appear to be possible for the project; either a NW27 or and individual permit. The Corps also expresses concern that rare or unique wetland habitats may be adversely impacted by the project; in particular, that Alternative A or B may result in an adverse impact to peat bogs/fens.

Response: Based on further review of the scientific literature we have changed the very specific classification of “fens” previously assigned to selected wetland locations within the project area to the more general classification of “raised peat mounds.” The literature describes fens as being supported solely by surface water sources with no groundwater hydrologic support. The raised peat mounds identified in the project area exhibit an upwelling groundwater source throughout the entire growing season. It is therefore more accurate to refer to these areas as raised peat mounds. The Joint Lead Agencies agree that these raised peat mounds are a unique and rare wetland community; however, they are also part of the larger peat wetland complex that covers a large portion of the eastern and northern extent of the project area. The peat wetlands including the raised peat mounds were formed over a period of several thousand years under which time they were not separated from Utah Lake by a dike nor were they mechanically pumped dry during the growing season. The peat wetlands including the raised peat mounds are currently in a degraded state under which they would not have naturally formed or provided full

function. Further, if the restoration project is not implemented and raised peat mounds are managed as they currently are, they will continue to degrade. The proposed project would reestablish the historic connection with Utah Lake and Provo River, and eliminate mechanical drainage and pumping of the raised peat mounds. The overall restoration effort would result in a significant increase in the raised peat mounds' function and would restore the natural conditions under which they formed and functioned for thousands of years. The anthropogenic impacts to the raised peat mounds that have taken place over the past 50 years would be eliminated to a large extent by the restoration project. The Joint Lead Agencies believe that implementation of Alternative A or B would not cause adverse impacts to the raised peat mounds. Exactly the opposite would occur. Alternatives A and B of the project would restore the raised peat mounds to the conditions under which they formed and allow them to provide full wetland functions. It is also likely that the larger peat wetland complex and the raised peat mounds would rise in elevation after the restoration project due to restored hydrology. This is a common result after natural hydrology is restored to impacted peat wetlands. Therefore, the Joint Lead Agencies believe the project should be permitted under a NW27 restoration permit which is the essence of this project. A new section of the Final EIS was added discussing the applicability of NW27 to the current project (Chapter 3, Section 3.5.10).

Comment 29.4: The Corps indicates that the Draft EIS text indicates that peat bog/fens are 2-3 feet higher than the surrounding areas, but this does not appear consistent with what is shown in Figure A-10 (Appendix A).

Response: The description of the raised peat mounds in the Draft EIS and the general elevation of these areas being raised 2-3 feet higher than the surrounding grade is not representative of the wide range in the conditions of the existing raised peat mounds. The raised peat mounds in the project area exhibit a range in elevation change compared to the surrounding grade. Several of the raised peat mounds are approximately 2-3 feet higher than the surrounding grade but other mounds are raised less than 1 foot above the surrounding grade which is why all of the mounds are not readily apparent on Figure A-10 (Appendix A). The raised peat mounds also vary in area with the smallest being less than 0.1 acre, which cannot be seen at the scale of Figure A-10.

The degree to which the mounds are raised is tied to local ground water discharges, the level of disturbance, and change in the historic hydrologic conditions under which the peat wetlands formed. The lowest mounds have likely been impacted more by grazing and trampling and by the lack of influence of Utah Lake flooding due to the hydrologic alterations and frequent pumping and draining of the project area. We expect these mounds to rise higher when the hydrology of the project area is restored to the conditions similar to those under which the raised peat mounds originally formed.

Comment 29.5: The Corps questions whether breaching the Skipper Bay dike to only 4,487 feet would impound water in the study area as the lake level recedes below that elevation.

Response: The invert of the proposed breach channels would be approximately 4,487 feet. This elevation is an approximate match for much of the existing lakeshore bed near

the Skipper Bay dike along the project west boundary. When Utah Lake level drops to less than 4,487 feet, the outflowing Provo River flows will tend to seek their own course through the lakebed sediments as the lake recedes, and the bottom of the channel will lower to less than 4,487 feet. Accordingly, we do not expect that the restoration area would become isolated from Utah Lake, but would remain connected via the river channel(s).

Comment 29.6: The Corps wonders what effect carp may have on the restoration site.

Response: The management plan for carp in the project area would be implemented the same as it is already being implemented for the other areas of Utah Lake. The June Sucker Recovery Implementation Program (JSRIP) initiated a carp-removal program in 2009 at Utah Lake which to date has removed more than 17 million pounds of carp from the lake. The Utah Lake Commission and other entities have joined the effort to secure sources for funding the carp removal effort, which is envisioned to continue indefinitely. Monitoring so far suggests a 20 percent reduction in the adult carp population since 2009. Since the carp control program began, fishing efforts have focused on open-water areas. The Joint Lead Agencies expect this trend to continue, at least with the gear currently employed by the commercial fishermen contracted by the JSRIP. If in the future different or additional methods or locations of harvesting carp are needed, those requirements would be addressed at that time by the JSRIP.

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