

**MOHAVE VALLEY IRRIGATION AND DRAINAGE DISTRICT**  
**Plan for the Creation of Extraordinary Conservation Intentionally Created Surplus**  
**During Calendar Year 2020**

Mohave Valley Irrigation and Drainage District (MVIDD) proposes to create Extraordinary Conservation Intentionally Created Surplus (EC-ICS) in calendar year 2020 pursuant to the Lower Basin Drought Contingency Operations Exhibit U.

MVIDD is an irrigation district created under the laws of the State of Arizona and holds a contract with the United States Bureau of Reclamation (Contract No. 14-06-W-204) for the delivery of Colorado River water to MVIDD for distribution to Arizona Priority 1 and 4 water entitlement holders within MVIDD. MVIDD administers agricultural water use within the district through a set of Agricultural Water Use subcontracts for delivery of Colorado River water to the individual landowners. For purposes of this EC-ICS program, these subcontracts will define the basic “farm unit” that is enrolled within the program. Within that farm unit, the individual fields are analyzed for their specific cropping history. That history is then analyzed for crop consumptive use over the five-year historical period and a historical consumptive use value for each field is assigned.

**Project Description:**

MVIDD proposes to create 6,137 acre-feet of EC-ICS in calendar year 2020. The following program will be administered at the local level. MVIDD has established criteria to determine eligibility for agricultural landowners to participate in the following program. To be eligible, agricultural landowners must:

1. Demonstrate a consistent pattern of historical irrigation of crops on fields within identified farm units in at least three over the past 5 years.
2. Demonstrate the calculation of past consumptive use for the individual fields to be fallowed in 2020 within the farm unit.
3. Agree to limit or alter the planting of crops on their land and reduce diversions to remain within an allowed diversion quantity of water for the farm unit.
4. Comply with MVIDD Resolution 2019-01 regarding installation of flow meters on all agricultural wells.
5. Ensure participating farm units are a minimum of 10 acres.

MVIDD has developed a policy document to govern program participation within the District. In addition, each participating landowner will be required to enter into a contract with the District agreeing to (1) abide by the terms of the policy document; (2) fallow the acres specified in this Plan of Creation; (3) reduce actual diversion of Colorado River water to the farm unit for the fallowed acres. The policy document and the individual contracts will be reviewed and approved by MVIDD’s Board of Directors before the end of calendar year 2019 and thereafter will be included as attachments to MVIDD’s 2020 ICS Certification Report.

## **Quantification Methodology:**

Exhibit 1, attached hereto, is a Technical Memorandum that provides the details of the 5 year (2014-2018) crop history and the quantification methods and calculations used to determine the consumptive use of the historical crops and the consumptive use reduction quantities (conservation yields) for each of the fields participating in the following program.<sup>1</sup> MVIDD has prepared a summary of this historical consumptive use history for the years 2014-2018 for the fields in each farm unit identified as participating in the following program. A list of participating farm units for 2020, the identification of the fields, location and number of acres to be temporarily taken out of production in calendar year 2020, and the quantification of each farm unit's anticipated reduction in consumptive use (conservation yield) is set forth in the table attached as Exhibit 2 to this Plan. In addition, Exhibit 2 quantifies the diversion reduction for each farm unit as discussed below.

In 2020, no farm unit within MVIDD proposes to engage in seasonal fallowing of any acres.

Exhibit 3 to this Plan of Creation is a table that identifies the Priority 1 (Present Perfected) and Priority 4 water entitlements within each participating farm unit, and calculates the relative conservation yield of fallowed acres within that farm unit that represent a reduction in consumptive use of Priority 1 water.

## **Limitations on ICS Creation:**

The consumptive use of Colorado River water within MVIDD is affected by various factors that are not within the control of the participating farm units, including the number of acres planted and the types of crops planted by non-participating landowners. In order to control the volume of water diverted by MVIDD and to provide assurance that EC-ICS is created through a reduction in agricultural consumptive use within MVIDD, the District agrees to the following limitations:

- An Agricultural Acreage Limitation. MVIDD shall limit total agricultural (irrigation) fields within MVIDD planted in year 2020 to no more than 4,386.23 acres. The Agricultural Acreage Limitation is calculated by aggregating the highest planted acreage in each farm unit within MVIDD during the period 2014-2018. This calculation is shown in the attached Exhibit 4.
- An Agricultural Diversion Limitation. The Agricultural Diversion Limitation is the maximum volume of water MVIDD will divert in 2020 for agricultural irrigation (21,353 acre-feet). It is calculated by subtracting the sum of the required diversion reduction amounts for each participating farm unit (8,372 acre-feet) from the MVIDD Agricultural

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<sup>1</sup> After completion of the Technical Memorandum, MVIDD determined that one of the fields identified for fallowing (Green Acres, Mohave II, LLC (18.22 acres)) was inadvertently planted. MVIDD has eliminated the field from this 2020 ICS Plan and has adjusted the conservation yield (from 6,232 AF to 6,137 AF) and the corresponding diversion reduction (from 8,499 AF to 8,372 AF) volumes accordingly.

Baseline Diversion (29,725 acre-feet in 2020). The Agricultural Baseline Diversion is calculated by MVIDD's agricultural diversion average as reported by the United States Bureau of Reclamation for the highest four of the most recent five years (2014-2018), not including the immediately preceding year (2019). The required diversion reduction for each farm unit is calculated by multiplying each fallowed acre by 7 acre-feet per acre (the MVIDD diversion allowance for farm units), then applying that reduction to each farm unit. These calculations are shown on Exhibit 2. The total sum of the required diversions is then subtracted from the Agricultural Baseline Diversion to arrive at the Agricultural Diversion Limitation for MVIDD for calendar year 2020.

In the event that either Agricultural Acreage Limitation or the Agricultural Diversion Limitation is inadvertently exceeded, MVIDD agrees that the reduction in conservation yield attributable to that exceedance shall be deducted from the planned EC-ICS volume to be created in that year.

#### **Verification Methodology:**

MVIDD will monitor the program throughout calendar year 2020 to ensure that participating lands are fallowed in accordance with the program, that the MVIDD Agricultural Acreage Limitation is not exceeded for planted acres within MVIDD, and that MVIDD agricultural (irrigation) diversions are reduced to remain within the Agricultural Diversion Limitation. MVIDD will also monitor total water use within each farm unit to ensure that remaining water use allocation for the enrolled but not fallowed lands has not been exceeded. MVIDD will report any identified discrepancy to the Bureau of Reclamation during the year or at year's end and document the same within its Certification Report. MVIDD will also monitor the fields selected for fallowing within each farm unit so that, in future years, mandatory rotation of fallowed versus planted fields can be enforced by MVIDD.

MVIDD understands and agrees that both the Bureau of Reclamation and the Arizona Department of Water Resources may conduct independent reviews of program compliance throughout the year, including on-site verification inspections. MVIDD and participating landowners, agree to allow reasonable access for and to cooperate with any such inspections.

During 2020, to ensure that any vegetation remaining on the fallowed lands does not consumptively use Colorado River water by drawing water from the Colorado River aquifer, and for dust control purposes, MVIDD and its participating farmers shall ensure that any such vegetation is desiccated through application of herbicides or other means. MVIDD agrees to provide Reclamation with information and updates regarding the vegetation eradication program. MVIDD and its participating farmers agree to use all means and practical mechanisms, including but not limited to, dirt berms in the portion of the irrigation ditch serving the fallowed field, or sealing the on-farm turnouts onto fallowed fields, to ensure no water deliveries can be made onto the fallowed fields.

**Certification Report:**

MVIDD will submit an ICS Certification Report as required by Section XI.G.3.D.1 of the 2007 Colorado River Interim Guidelines. The Certification Report will contain appropriate information that documents the amount of ICS created, and demonstrates that the method of creation was consistent with this ICS Plan, LBOps Exhibit U, and a Delivery Agreement. MVIDD acknowledges that, in accordance with Section 2.5.B of the Forbearance Agreement, the Secretary of the Interior, acting through the Lower Colorado Regional Director, shall verify information in MVIDD's Certification Report in consultation with the Lower Division States, and shall provide a final written decision regarding the amount of ICS created.

**Exhibits:**

- Exhibit 1      Technical Memorandum prepared for MVIDD by Land IQ detailing the planted acres within MVIDD in the period 2014-2018, the crop history for fields of interest (those fields selected for fallowing) and the average consumptive use of water on those fields for the historical period (conservation yield).
- Exhibit 2:      Table showing all of the participating land units (identified by sub-contract number within MVIDD), name, parcel number, FSA Farm number, crop history by field, planted acres, consumptive use by year and planted crop for each year 2014-2018, average 5 year field consumptive use history and per acre consumptive use. This Table also calculates the reduction in diversion quantity for each farm unit by multiplying the number of acres fallowed by 7 acre-feet per acre (the MVIDD contractual diversion allowance).
- Exhibit 3:      Table showing the allocation of Priority 1 (Present Perfected) and Priority 4 water entitlements for each participating farm unit holding Priority 1 entitlement, and calculating the relative conservation yield of Priority 1 and Priority 4 water for the fallowed fields in each participating farm unit.
- Exhibit 4:      Table showing the lands actually planted in MVIDD in each year 2014-2018 (derived from the satellite imagery analysis contained in Exhibit 1) and calculating the highest planted acreage in each farm unit. This analysis is used to calculate the total Agricultural Acreage Limitation of 4,386.23 acres.

**Summary:**

The Summary Table on the next page lists the participating farm units, the acreage to be fallowed, the 5-year average consumptive use volume for each fallowed field, the corresponding conservation yield for the fallowed fields, and a breakdown between the conservation yield attributable to PPR and 4<sup>th</sup> Priority water. The total diversion reduction for each participating farm unit is also shown, and is broken down by PPR and 4<sup>th</sup> Priority. The values in the table are taken directly from Exhibit 2.



Contract No.	Farm Unit Name	Fallowed Fields Historic	Farm Unit Total Acres	2020 Fallowed Acres	Consumptive Use (Conservation Yield)		PPR	4th Priority	Total Diversion Reduction	4 <sup>th</sup> Priority Diversion Reduction	PPR Diversion Reduction
		Cropping Pattern 2014-2018			Average AF/ac	Annual AFY	Cons. Yield	Cons. Yield	Annual AFY (7 AF/ac)		
1989-05	Nancy Vanderslice, Trustee	Alfalfa	108	36.64	5.20	190.54	10.21	180.33	256.48	242.74	13.74
2006-03	Yadegar/Tropicana Ranch	Alfalfa and Bermuda	152.6	77.24	4.47	344.97	0	344.97	540.68	540.68	0
2008-02	Sherrill Ventures, LLLP - West	Alfalfa and Hay	287.9	89.63	5.21	467.14	0	467.14	627.40	627.40	0
2009-01	Green Acres Mohave, LLC; Sec. 3	Alfalfa	127.5	72.37	5.20	376.36	0	376.36	506.60	506.60	0
2009-04	Green Acres Mohave, LLC; Sec. 31	Alfalfa	180	86.19	5.20	448.20	14.23	433.97	603.30	584.13	19.17
2009-03	Sherrill Ventures, LLLP - East	Alfalfa	138.4	33.20	5.20	172.66	0	172.64	232.42	232.42	0
2012-04C	WPI-919 Farm AZ, LLC	Alfalfa	847.3	426.35	5.20	2,217.20	0	2,217.02	2,984.48	2,984.48	0
2013-04A	WPI-Hancock Farms AZ, LLC	Alfalfa and Sudan	138.4	35.93	5.04	180.91	0	180.91	251.50	251.50	0
2013-05	WPI-Hulet Farms AZ, LC	Alfalfa and Sudan	105.3	33.82	5.02	169.77	169.77	0.00	236.73	7.09	229.64
2015-06C	WPI- R3 Farm AZ, LLC	Alfalfa	310	162.98	5.20	847.54	0	847.54	1,140.84	1,140.84	0
2018-01	WPI II-COL Farm AZ, LLC	Alfalfa and Sudan	271.5	141.63	5.10	722.10	22.54	699.56	991.41	960.02	31.39
<b>Totals</b>			2666.9	1195.98		6,137.39	216.75	5,920.44	8,371.84	8,077.90	293.94

Exhibit 1  
Land IQ Technical Memorandum

## **MOHAVE VALLEY IRRIGATION & DRAINAGE DISTRICT— CROP CONSUMPTIVE USE ANALYSIS IN MOHAVE VALLEY, AZ**

**PREPARED FOR:** Mohave Valley Irrigation & Drainage District

**PREPARED BY:** Chris Stall/Land IQ  
Joel Kimmelshue/Land IQ

**DATE:** November 6, 2019

### **1 PURPOSE AND BACKGROUND**

Mohave Valley Irrigation & Drainage District (MVIDD) has asked Land IQ, LLC to perform a temporal and average consumptive use (CU) analysis for a proposed fallowing program in Mohave County, Arizona. Within MVIDD, there are 36 landowners or farming entities totaling 4,564 acres (Figure 1). Eleven of these 36 landowners in MVIDD own 2,759 acres (139 fields) that have been farmed in the last five years. These eleven participating landowners propose to fallow a subset of 61 of these fields, fields of interest (FOI), that encompass 1,214 acres of the total 2,759 acres owned (Figure 2). The water savings for fallowing FOI will be based on the previous five-year crop history and the calculated consumptive use. Crops typically grown in this area are alfalfa, Bermuda grass/other hay, cotton, and Sudan grass, with alfalfa dominating the planted acreage. Land IQ performed a remote sensing analysis to identify crop types from 2014 through 2018 for the MVIDD fields.

The consumptive use analysis performed by Land IQ was completed using cleaned reference evapotranspiration (ET<sub>o</sub>) calculations from Dr. Paul Brown (University of Arizona Cooperative Extension). The analysis was also informed with area-specific crop parameters.

### **2 REMOTE SENSING ANALYSIS**

Land IQ employs various remote sensing methods of crop identification in California with over 97% accuracy. The accuracy for this project should be as precise as the California analyses because the Mojave Valley has lower crop diversity comparatively. Additionally, the field boundaries only encompass the irrigated portion of parcel boundaries digitized at a 1:2,000 scale. This eliminates error from navigable roads, farm shops, and any other non-irrigated area. Land IQ used multiple imagery and raster data sources. National Agriculture Imagery Program (aerial) and Landsat (satellite-based) imagery was used for all crop classification via remote sensing. A secondary QA/QC was completed using the Cropscape (USDA remote sensing product) data layers (Figure 3). Crop mapping was completed for years 2014-2018 (Figures 4-8). Irrigated acreages by crop and by year are shown in Table 1. Acreage by MVIDD landowner can be found in Section 4.

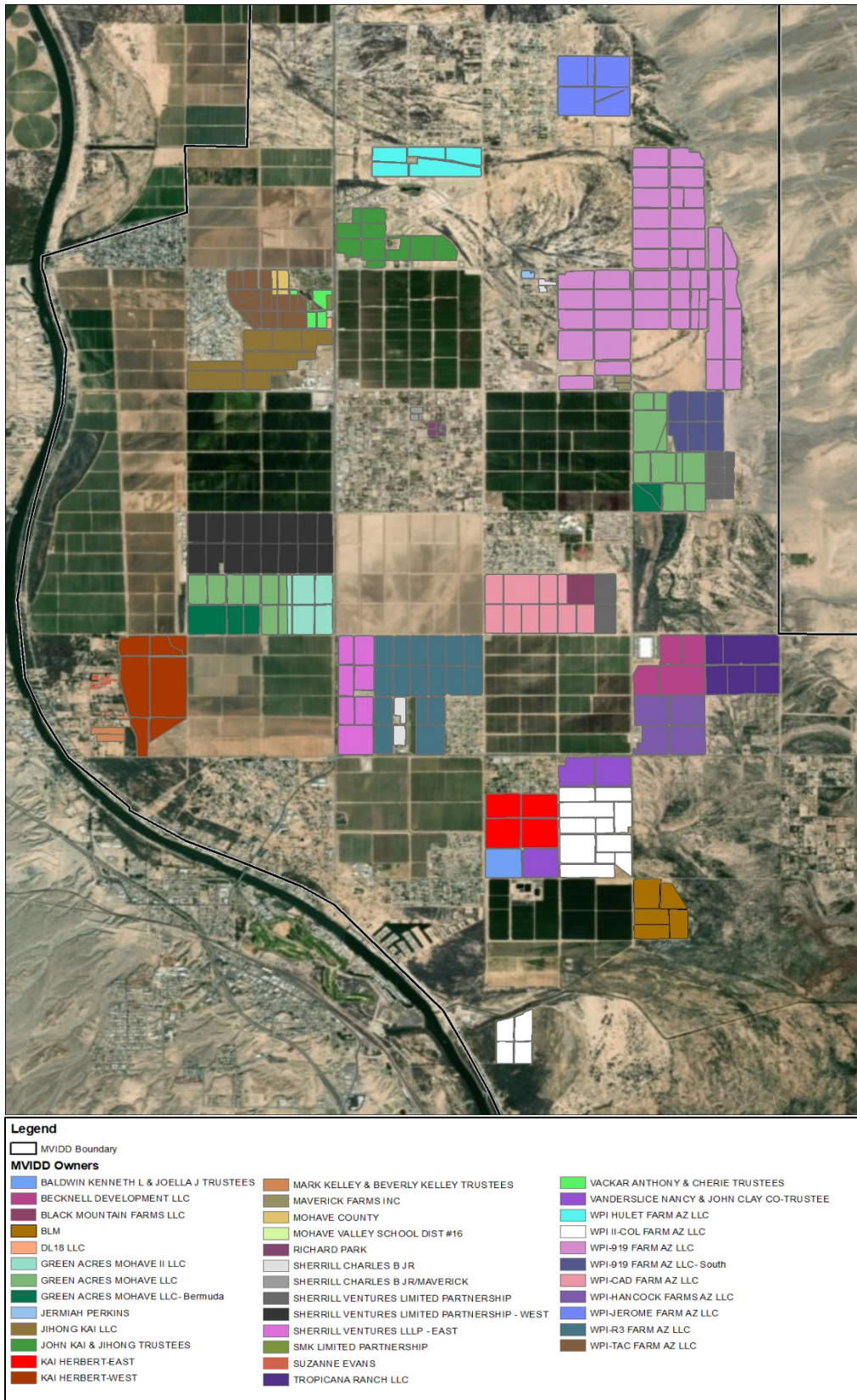


Figure 1. Ownership of MVIDD Fields.



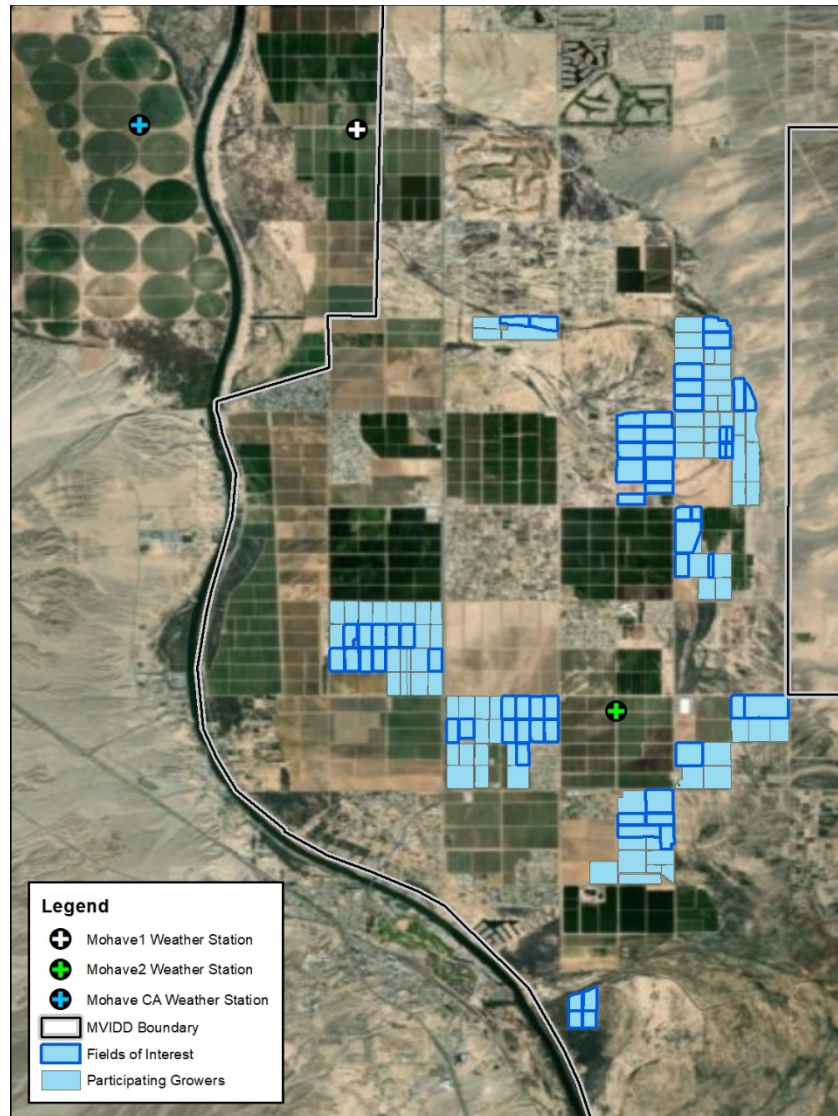


Figure 2. Distribution of the Fields of Interest within MVIDD.



Figure 3. Examples of Landsat Imagery (left), NAIP Imagery (center) and Cropscape Data (right)



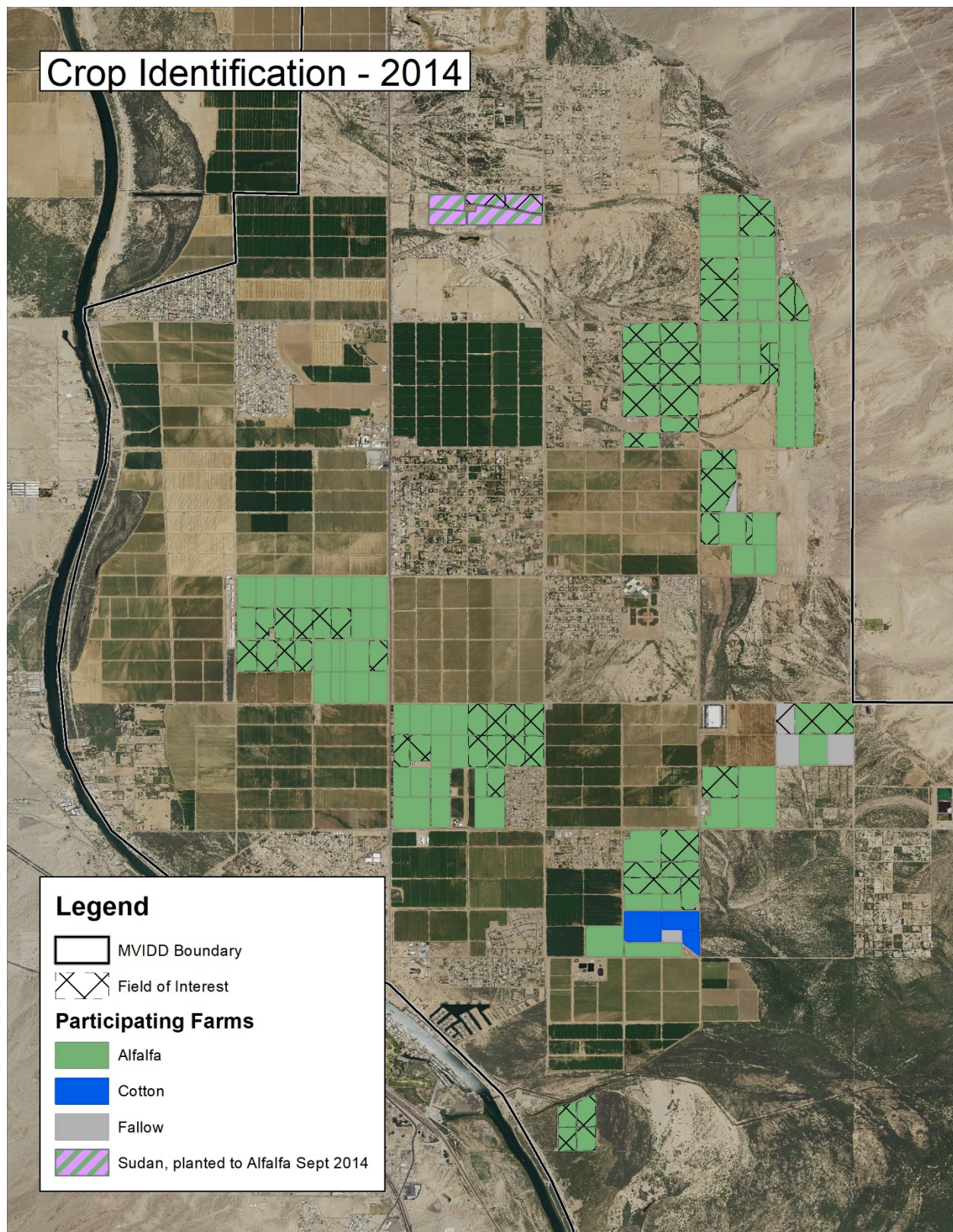


Figure 4. MVIDD Crop Identification – 2014



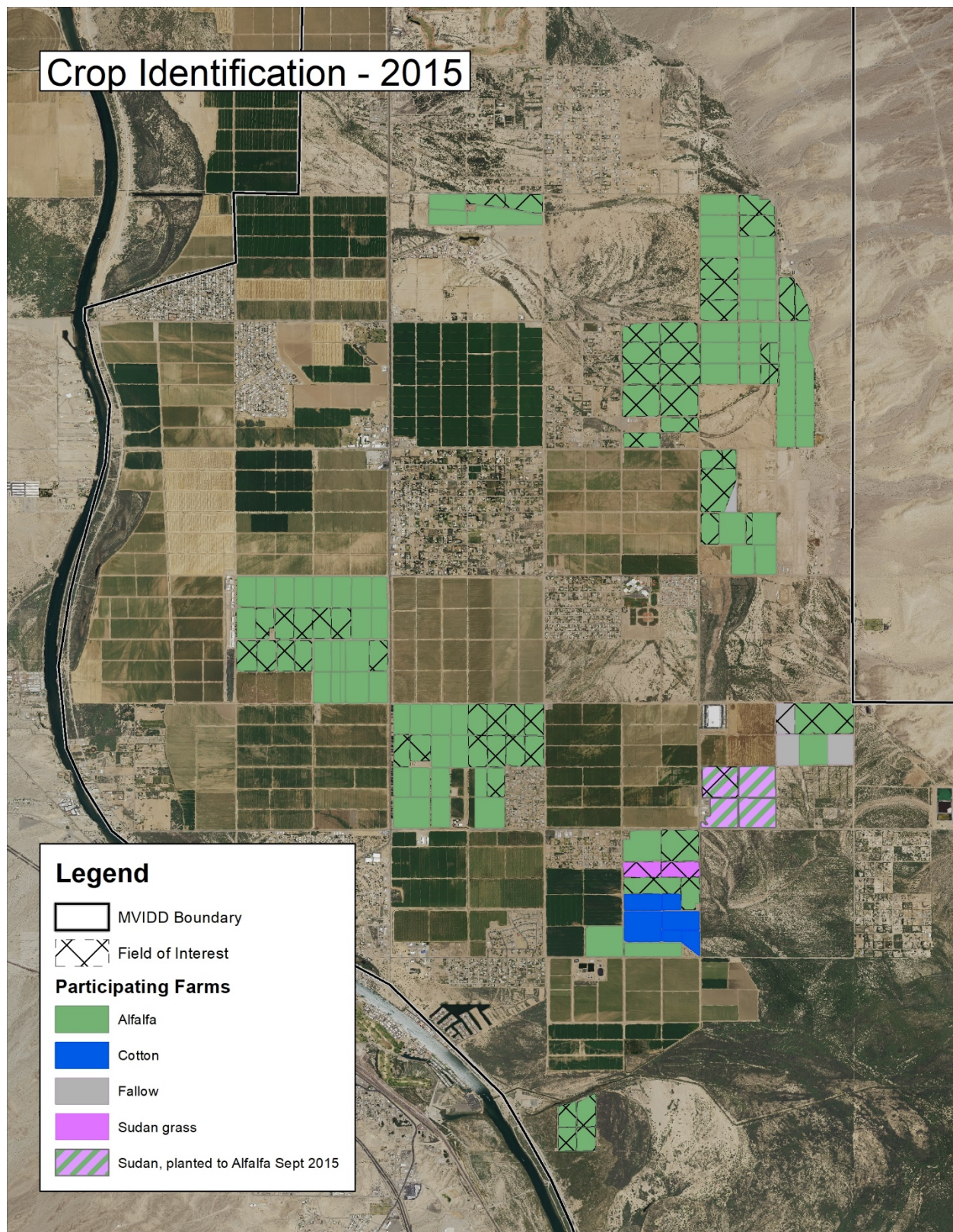


Figure 5. MVIDD Crop Identification – 2015



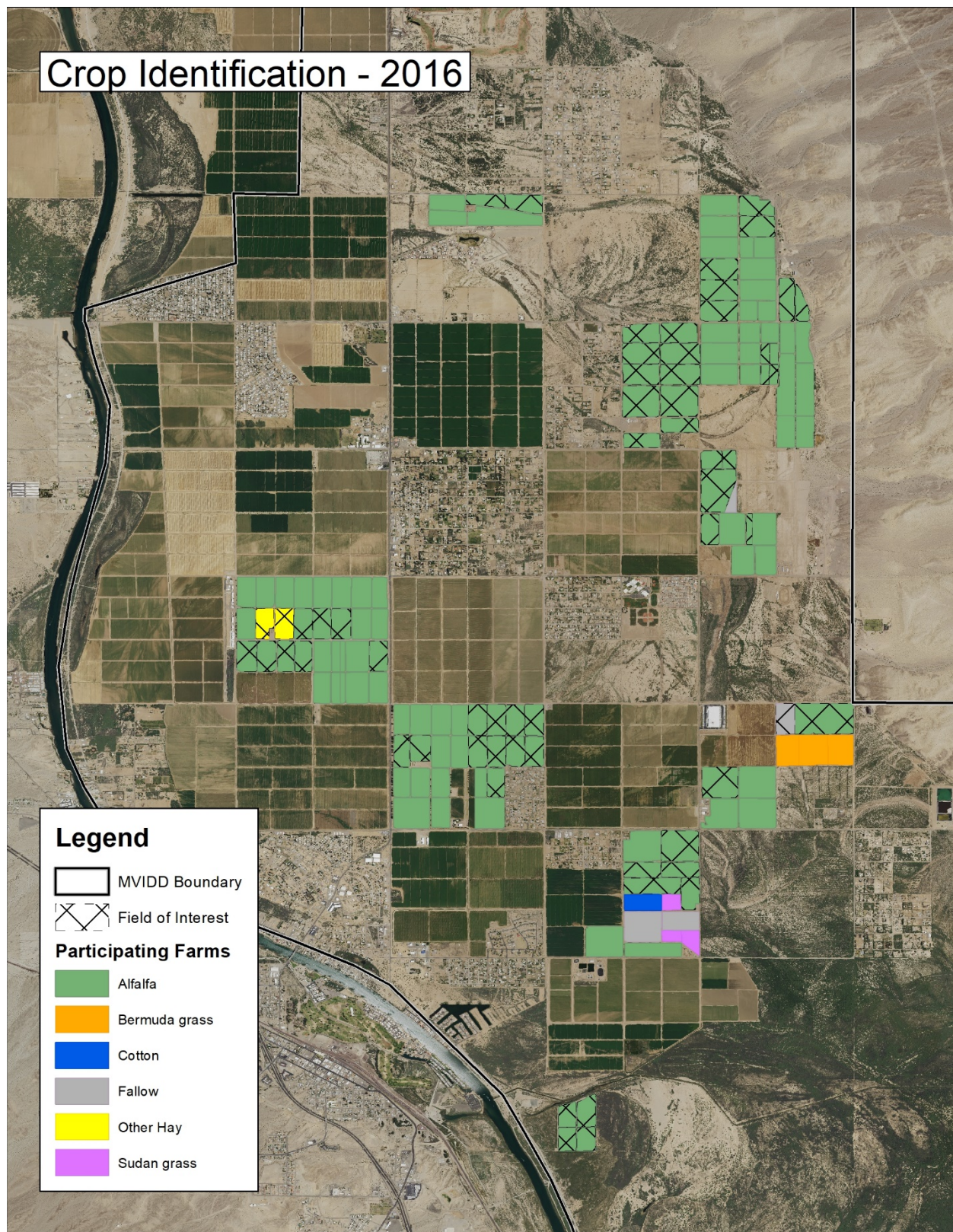


Figure 6. MVIDD Crop Identification – 2016



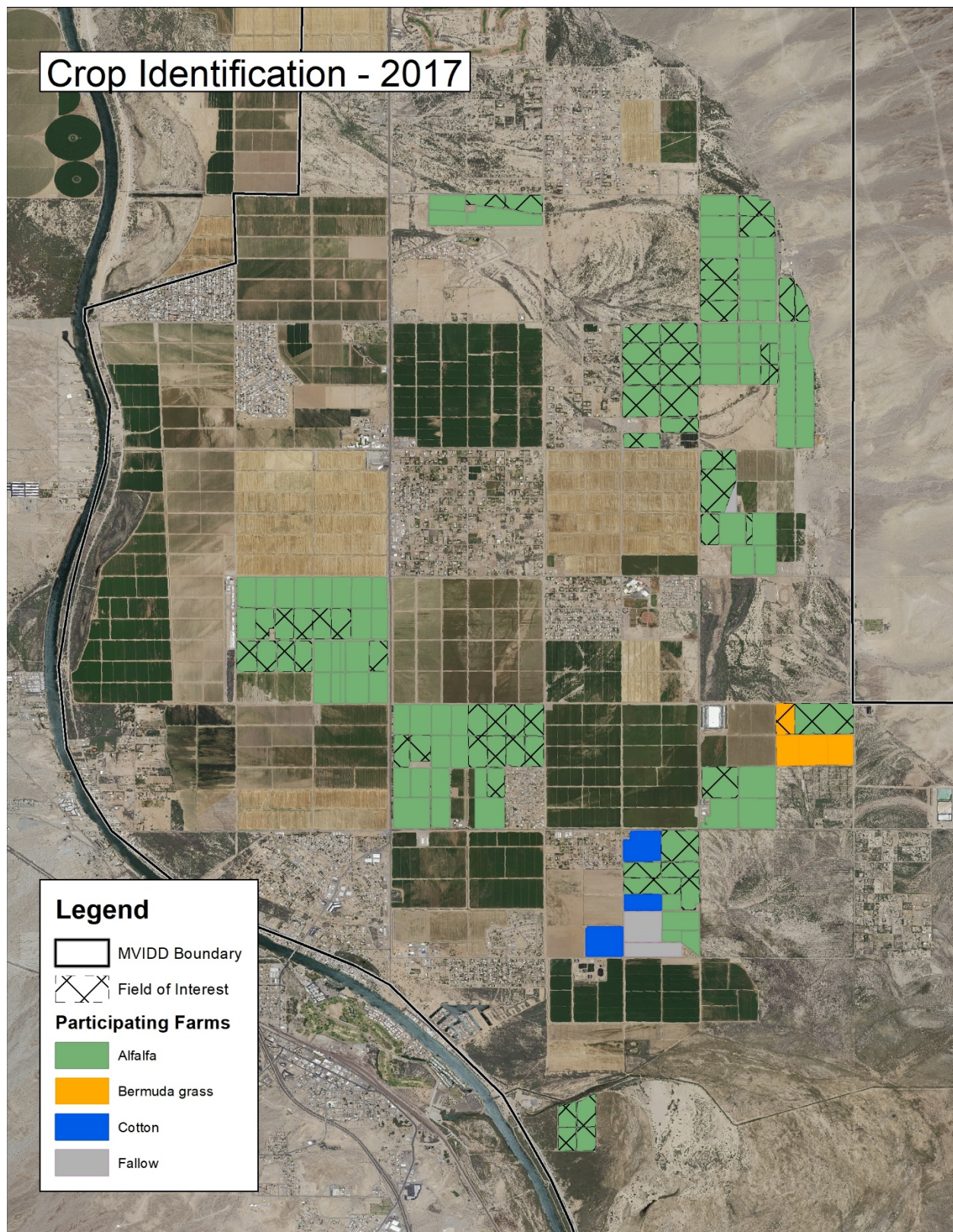


Figure 7. MVIDD Crop Identification – 2017



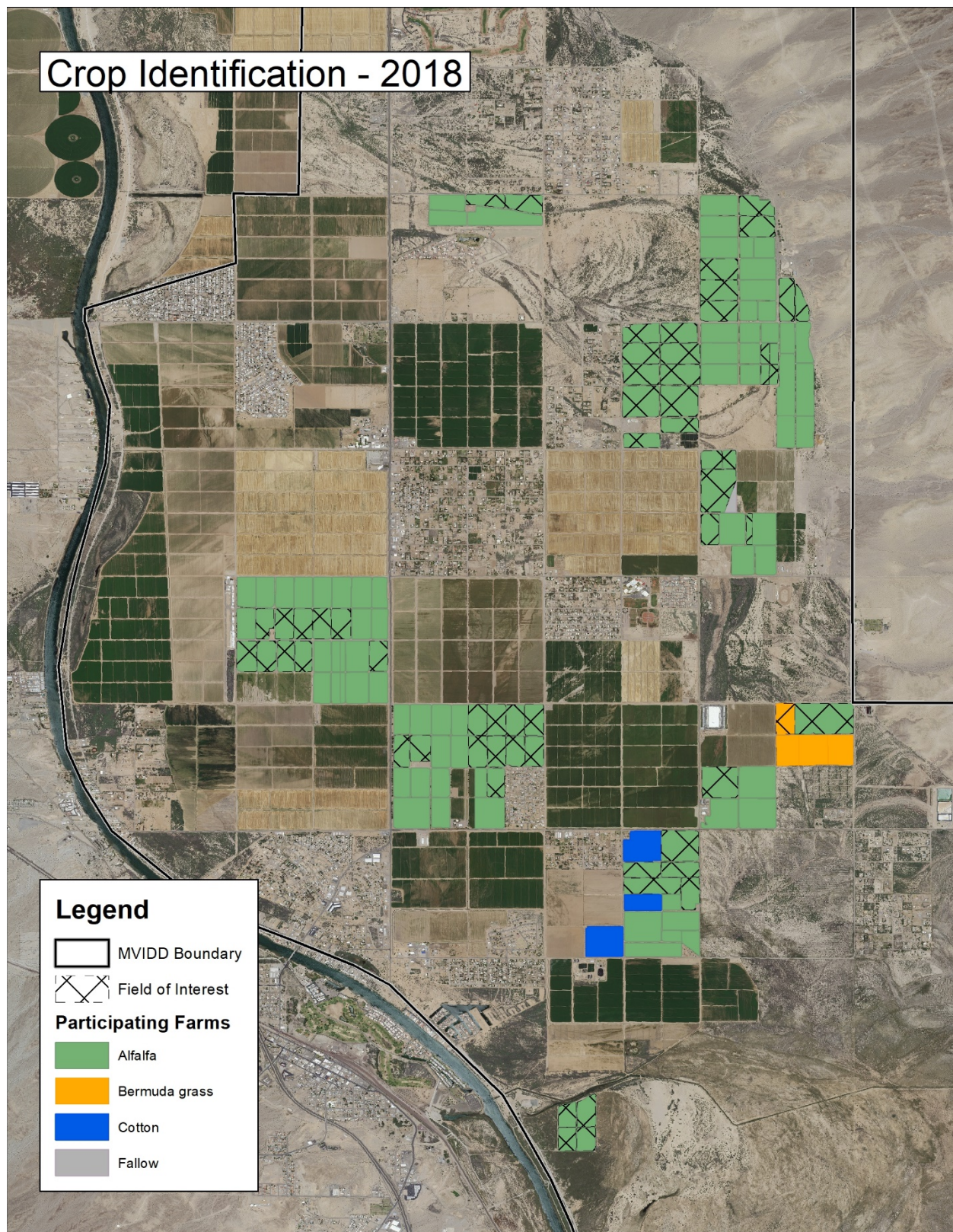


Figure 8. MVIDD Crop Identification – 2018

**Table 1. Crop Acreage by Year for the Fields of Interest in MVIDD**

Crop	2014	2015	2016	2017	2018
<b>Alfalfa</b>	1,161.6	1,123.1	1,161.0	1,195.4	1,195.4
<b>Bermuda Grass/Other Hay</b>	-	-	-	18.9	18.9
<b>Fallow</b>	18.9	18.9	18.9	-	-
<b>Sudan Grass</b>	33.8*	72.3**	-	-	-
<b>Total</b>	1,214	1,214	1,214	1,214	1,214

\*33.8 acres of summer Sudan grass planted to alfalfa in September 2014

\*\*35.9 acres of summer Sudan grass planted to alfalfa in September 2015

### 3 ETO DATA

For this consumptive use analysis, reference evapotranspiration was calculated and put through a quality control (QC) process by Dr. Paul Brown, the Associate Director for Extension Programs in Agriculture and Natural Resources who currently oversees the operation of the Arizona Meteorological Network (AZMET).

ETo is an estimate of the evapotranspiration (ET) of a well-watered short grass plant, influenced only by the climatic variables. Crop coefficient values (Kc) are then applied to the calculated ETo values to adjust for differences in crop physiology and thus produce crop specific evapotranspiration (ETc). Kc values may range from 0.4 (ETc<ETo) up to 1.2 (ETc>ETo).

Accuracy of the CU calculations depend on the precision and reliability of the weather data for ETo calculation. For this reason, the Arizona Meteorological Network (AZMET) was the primary data source. AZMET has been providing weather-based information to agricultural interests across central and southern Arizona since 1987. AZMET is a trusted data source because it is closely monitored by the University of Arizona and its Cooperative Extension programs.

There are three AZMET stations within a short distance of the FOI within MVIDD (Figure 2). These stations are Mohave1, Mohave2, and Ft. Mohave, CA. Mohave1 station data collection started in 1992, Mohave2 started in 2003, and Ft. Mohave, CA started midway through 2017. These stations are within five miles of each other and have an elevation difference of 12 feet, so the data should be very similar and can be easily compared for the overlapping time period.

The Mohave1 station is in the corner of an alfalfa field in the northeast portion of MIVDD. Mohave2 is located on an unpaved shop road between alfalfa fields in the center of MVIDD. Ft. Mohave, CA weather station is located between three center-pivot alfalfa fields across the Colorado River in California.

As a result of these weather stations being close to the FOI and proximity to agriculture, an average of Mohave1 and Mohave2 ETo values were used from 2014-2017 and an average ETo value from all three stations was used in 2018.

Kc values applied to the ETo values to calculate crop ET were referenced from Allen et al., 1998 and personal communications with professors at University of California, Davis (Snyder, 2016).



## 4 RESULTS AND CONCLUSIONS

Total consumptive use calculations are comprised of calculated unit consumptive use per crop and the area of each crop.

### 4.1 EVAPOTRANSPIRATION

Total CU represents the total amount of water that the crop uses in the growing season, regardless of the source (Irrigation or precipitation). Total CU was calculated for crops grown in the FOI from 2014 through 2018. The results of these calculations are shown in Table 2. These values represent the total potential amount of water that the crop would use during the year if there were no restrictions. Table 3 shows the consumptive use of applied water (CU of AW) in acre-inches. The CU of AW accounts for the contributions of effective precipitation to the system.

These values compare favorably with the report published in 2013 from the Bureau of Reclamation (BOR, 2013) using the Lower Colorado River Accounting System (LCRAS). Although the report calculates values from 2013, the total CU for alfalfa was 65.1 Acre-in/Ac and total Sudan grass CU was 42 Acre-in/Ac.

**Table 2. Comparison of Crop CU in the Mohave Valley, AZ**

Crop	2014	2015	2016	2017	2018
Alfalfa	62.1	63.3	62.8	63.5	66.6
Bermuda Grass/Other Hay	62.3	63.5	62.7	64.0	67.0
Sudan Grass	37.0	38.4	38.3	38.8	41.3

**Table 3. Comparison of Crop CU from AW in the Mohave Valley, AZ**

Crop	2014	2015	2016	2017	2018
Alfalfa	59.6	60.6	59.6	61.0	65.0
Bermuda Grass/Other Hay	59.8	60.8	59.5	61.5	65.5
Sudan Grass	35.1	37.8	35.6	37.9	40.9

### 4.2 AVERAGE CONSUMPTIVE USE BY LANDOWNER

Average CU is calculated for each landowner by using an area weighted average for the consumptive use of all the FOI. For these purposes, an average of total consumptive use (Table 2) and CU from AW (Table 3) was used for calculations, due to the intensity and variability of precipitation within the Mohave Valley.

Tables 4-8 show the results of the yearly crop mapping by owner for 2014 through 2018. Alfalfa dominates the crop mix for most owners in most years, with few exceptions. An annual area weighted

average CU by owner was calculated for the FOI. The annual average CU by owner (Table 9) was calculated by multiplying the average CU (Tables 2 and 3) by the area-weighted crop type acreage.

The participating growers listed in the tables below plan to fallow acreage for the 2020 growing season. The water savings caused by fallowing is calculated in Table 10, showing the planned acreage to be fallowed in 2020, the area-weighted average CU for each owner's FOI, and the anticipated water savings.

**Table 4. Crop Acreage by Type and Owner, 2014**

Owner	Alfalfa	Bermuda Grass	Fallow	Hay	Sudan Grass
GREEN ACRES MOHAVE II LLC	18.2	-	-	-	-
GREEN ACRES MOHAVE LLC	158.6	-	-	-	-
SHERRILL VENTURES LIMITED PARTNERSHIP - WEST	89.6	-	-	-	-
SHERRILL VENTURES LLLP - EAST	33.2	-	-	-	-
TROPICANA RANCH LLC	58.4	-	18.8	-	-
VANDERSLICE NANCY & JOHN CLAY CO-TRUSTEE	36.6	-	-	-	-
WPI HULET FARM AZ LLC	-	-	-	-	33.8*
WPI II-COL FARM AZ LLC	141.6	-	-	-	-
WPI-919 FARM AZ LLC	426.4	-	-	-	-
WPI-HANCOCK FARMS AZ LLC	35.9	-	-	-	-
WPI-R3 FARM AZ LLC	163.0	-	-	-	-

\*33.8 Acres double cropped with spring/summer Sudan grass and fall planted alfalfa

**Table 5. Crop Acreage by Type and Owner, 2015**

Owner	Alfalfa	Bermuda Grass	Fallow	Hay	Sudan Grass
GREEN ACRES MOHAVE II LLC	18.2	-	-	-	-
GREEN ACRES MOHAVE LLC	158.6	-	-	-	-
SHERRILL VENTURES LIMITED PARTNERSHIP - WEST	89.6	-	-	-	-
SHERRILL VENTURES LLLP - EAST	33.2	-	-	-	-
TROPICANA RANCH LLC	58.4	-	18.8	-	-
VANDERSLICE NANCY & JOHN CLAY CO-TRUSTEE	36.6	-	-	-	-
WPI HULET FARM AZ LLC	33.8	-	-	-	-
WPI II-COL FARM AZ LLC	105.3	-	-	-	36.3
WPI-919 FARM AZ LLC	426.4	-	-	-	-
WPI-HANCOCK FARMS AZ LLC	-	-	-	-	35.9*
WPI-R3 FARM AZ LLC	163.0	-	-	-	-

\*35.9 Acres double cropped with spring/summer Sudan grass and fall planted alfalfa

**Table 6. Crop Acreage by Type and Owner, 2016**

Owner	Alfalfa	Bermuda Grass	Fallow	Hay	Sudan Grass
GREEN ACRES MOHAVE II LLC	18.2	-	-	-	-
GREEN ACRES MOHAVE LLC	158.6	-	-	-	-
SHERRILL VENTURES LIMITED PARTNERSHIP - WEST	55.2	-	-	-	-
SHERRILL VENTURES LLLP - EAST	33.2	-	-	34.4	-
TROPICANA RANCH LLC	58.4	-	18.8	-	-
VANDERSLICE NANCY & JOHN CLAY CO-TRUSTEE	36.6	-	-	-	-
WPI HULET FARM AZ LLC	33.8	-	-	-	-
WPI II-COL FARM AZ LLC	141.6	-	-	-	-
WPI-919 FARM AZ LLC	426.4	-	-	-	-
WPI-HANCOCK FARMS AZ LLC	35.9	-	-	-	-
WPI-R3 FARM AZ LLC	163.0	-	-	-	-

**Table 7. Crop Acreage by Type and Owner, 2017**

Owner	Alfalfa	Bermuda Grass	Fallow	Hay	Sudan Grass
GREEN ACRES MOHAVE II LLC	18.2	-	-	-	-
GREEN ACRES MOHAVE LLC	158.6	-	-	-	-
SHERRILL VENTURES LIMITED PARTNERSHIP - WEST	89.6	-	-	-	-
SHERRILL VENTURES LLLP - EAST	33.2	-	-	-	-
TROPICANA RANCH LLC	58.4	18.8	-	-	-
VANDERSLICE NANCY & JOHN CLAY CO-TRUSTEE	36.6	-	-	-	-
WPI HULET FARM AZ LLC	33.8	-	-	-	-
WPI II-COL FARM AZ LLC	141.6	-	-	-	-
WPI-919 FARM AZ LLC	426.4	-	-	-	-
WPI-HANCOCK FARMS AZ LLC	35.9	-	-	-	-
WPI-R3 FARM AZ LLC	163.0	-	-	-	-

**Table 8. Crop Acreage by Type and Owner, 2018**

Owner	Alfalfa	Bermuda Grass	Fallow	Hay	Sudan Grass
GREEN ACRES MOHAVE II LLC	18.2	-	-	-	-
GREEN ACRES MOHAVE LLC	158.6	-	-	-	-
SHERRILL VENTURES LIMITED PARTNERSHIP - WEST	89.6	-	-	-	-
SHERRILL VENTURES LLLP - EAST	33.2	-	-	-	-
TROPICANA RANCH LLC	58.4	18.8	-	-	-
VANDERSLICE NANCY & JOHN CLAY CO-TRUSTEE	36.6	-	-	-	-
WPI HULET FARM AZ LLC	33.8	-	-	-	-
WPI II-COL FARM AZ LLC	141.6	-	-	-	-
WPI-919 FARM AZ LLC	426.4	-	-	-	-
WPI-HANCOCK FARMS AZ LLC	35.9	-	-	-	-
WPI-R3 FARM AZ LLC	163.0	-	-	-	-

**Table 9. Area-Weighted CU (Acre-In/Ac) by Year and Owner**

Owner	2014	2015	2016	2017	2018	Avg CU
<b>GREEN ACRES MOHAVE II LLC</b>	60.8	61.9	61.2	62.2	65.8	62.4
<b>GREEN ACRES MOHAVE LLC</b>	60.8	61.9	61.2	62.2	65.8	62.4
<b>SHERRILL VENTURES LIMITED PARTNERSHIP - WEST</b>	60.8	61.9	61.2	62.2	65.8	62.4
<b>SHERRILL VENTURES LLLP - EAST</b>	60.8	61.9	61.2	62.2	65.8	62.4
<b>TROPICANA RANCH LLC</b>	46.0	46.8	46.3	62.4	65.9	53.6
<b>VANDERSLICE NANCY &amp; JOHN CLAY CO-TRUSTEE</b>	60.8	61.9	61.2	62.2	65.8	62.4
<b>WPI HULET FARM AZ LLC</b>	50.0	61.9	61.2	62.2	65.8	60.2
<b>WPI II-COL FARM AZ LLC</b>	60.8	55.8	61.2	62.2	65.8	61.2
<b>WPI-919 FARM AZ LLC</b>	60.8	61.9	61.2	62.2	65.8	62.4
<b>WPI-HANCOCK FARMS AZ LLC</b>	60.8	52.0	61.2	62.2	65.8	60.4
<b>WPI-R3 FARM AZ LLC</b>	60.8	61.9	61.2	62.2	65.8	62.4



**Table 10. Average CU, Planned 2020 Fallow Acreage and Estimated Fallowed Water Savings**

Owner	Average CU (Ac-In/Acre)	Planned 2020 Fallow Acreage	Estimated Water Savings (Acre Feet)
<b>GREEN ACRES MOHAVE II LLC</b>	62.4	18.2	94.7
<b>GREEN ACRES MOHAVE LLC</b>	62.4	158.6	824.6
<b>SHERRILL VENTURES LIMITED PARTNERSHIP - WEST</b>	62.4	89.6	466.1
<b>SHERRILL VENTURES LLLP - EAST</b>	62.4	33.2	172.7
<b>TROPICANA RANCH LLC</b>	53.6	77.2	345.0
<b>VANDERSLICE NANCY &amp; JOHN CLAY CO-TRUSTEE</b>	62.4	36.6	190.5
<b>WPI HULET FARM AZ LLC</b>	60.2	33.8	169.8
<b>WPI II-COL FARM AZ LLC</b>	61.2	141.6	722.1
<b>WPI-919 FARM AZ LLC</b>	62.4	426.4	2,217.2
<b>WPI-HANCOCK FARMS AZ LLC</b>	60.4	35.9	180.9
<b>WPI-R3 FARM AZ LLC</b>	62.4	163.0	847.5
<b>SUM</b>	-	1,214	6,232

## 5 REFERENCES

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Exhibit 2  
Table of Participating Farm Units

# Exhibit 2. MVIDD 2020 ICS Plan

## 5 Year Consumptive Use History for EC-ICS Participating Lands for 2020

Entitlement	Farm Unit Name	Mohave County	FSA	FSA	FSA	Farmers	Crop Type History	Planted	2014	2015	2016	2017	2018	Total 5-YR CU	Average 5-YR	Average 5 -YR	Diversion Reduction
Contract No.		Parcel No.	Farm #	Tract #	Field #	Field #	by Field	Acres Per Year	CU by Crop History	CU by Crop History	CU by Crop History	CU by Crop History	CU by Crop History	Field History	Field History	per Acre History	7 AF/ac
1989-05	Nancy Vanderslice, Trustee								5.07	5.16	5.10	5.19	5.48				
Sec.13		224-23-015	19	20	2	2	Alfalfa	36.6	185.68	189.10	186.96	190.05	200.90	952.69	190.54	5.20	
								36.64									
	Total Conserved														190.54	5.20	256.48
2006-03	Yadegar/Tropicana Ranch								5.07	5.16	5.09	5.23	5.52				
Sec. 7		224-07-014	63	31	2		Blended Crop	77.2	295.91	301.35	297.42	403.82	426.33	1,724.83	344.97	4.47	
								77.24									
	Total Conserved				Partial Acreage Years (2014-2016) -->			58.39							344.97	4.47	540.68
2008-02	Sherrill Ventures, LLLP								5.07	5.16	Mix	5.19	5.48				
Sec. 3		224-21-007	4	19	10	5E	Blended Crop	16.2	82.01	83.52	82.43	83.94	88.73	420.63	84.13	5.20	
			4	19	11	6W	Blended Crop	18.2	92.41	94.11	92.89	94.59	99.99	473.99	94.80	5.20	
			4	19	12	6E	Alfalfa	18.2	92.29	93.99	92.93	94.46	99.86	473.53	94.71	5.20	
			4	19	13	7W	Alfalfa	17.7	89.82	91.47	94.46	91.93	97.18	464.86	92.97	5.25	
			4	19	14	7E	Alfalfa	19.3	97.68	99.48	99.86	99.98	105.69	502.69	100.54	5.22	
								89.63									
	Total Conserved														467.14	5.21	627.40
2009-01	Green Acres Mohave, LLC								5.07	5.16	5.10	5.19	5.48				
Sec. 3		224-21-008	457		1	1	Alfalfa	19.7	99.89	101.73	100.58	102.24	108.08	512.51	102.50	5.20	
			457		2	2	Alfalfa	18.9	95.94	97.70	96.60	98.19	103.80	492.22	98.44	5.20	
			457		3	3	Alfalfa	16.6	84.13	85.67	84.71	86.10	91.02	431.63	86.33	5.20	
			457		4	4	Alfalfa	17.1	86.82	88.41	87.42	88.86	93.93	445.44	89.09	5.20	
								72.37									
	Total Conserved														376.36		506.60
2009-04	Green Acres Mohave, LLC								5.07	5.16	5.10	5.19	5.48				
Sec. 31		225-09-047			1	1	Alfalfa	12.1	61.29	62.42	61.71	62.73	66.31	314.46	62.89	5.20	
					2	2	Alfalfa	7.9	40.15	40.89	40.43	41.09	43.44	206.00	41.20	5.20	
		6.86 Fallow			3	3	Alfalfa	42.5	215.33	219.29	216.81	220.39	232.97	1,104.79	220.96	5.07	
					4	4	Alfalfa	17.6	89.13	90.76	89.74	91.22	96.43	457.28	91.46	5.20	
					6	6	Alfalfa	6.1	30.88	31.45	31.10	31.61	33.42	158.46	31.69	5.20	
								86.19									
	Total Conserved														448.20	2.83	603.30
2009-03	Sherrill Ventures, LLLP								5.07	5.16	5.10	5.19	5.48				
Sec. 11		224-42-003A	4	12	9	5W	Alfalfa	16.2	82.24	83.75	82.81	84.17	88.98	421.95	84.39	5.20	
			4	12	10	5E	Alfalfa	17.0	86.03	87.61	86.62	88.05	93.08	441.38	88.28	5.20	
								33.20									
	Total Conserved														172.66	5.20	232.42
12-04C / 2012-0	WPI-919 Farm AZ, LLC								5.07	5.16	5.10	5.19	5.48				
Sec 19		225-11-010			2	2	Alfalfa	19.8	100.24	102.08	100.93	102.60	108.46	514.31	102.86	5.20	
					4	4	Alfalfa	23.4	118.66	120.84	119.48	121.45	128.39	608.82	121.76	5.20	
					7	7	Alfalfa	25.5	129.21	131.58	130.10	132.25	139.80	662.94	132.59	5.20	
					9	9	Alfalfa	24.6	124.50	126.79	125.36	127.42	134.70	638.77	127.75	5.20	

Entitlement	Farm Unit Name	Mohave County	FSA	FSA	FSA	Farmers	Crop Type History	Planted	2014	2015	2016	2017	2018	Total 5-YR CU	Average 5-YR	Average 5 -YR	Diversion Reduction
Contract No.		Parcel No.	Farm #	Tract #	Field #	Field #	by Field	Acres Per Year	CU by Crop History	CU by Crop History	CU by Crop History	CU by Crop History	CU by Crop History	Field History	Field History	per Acre History	7 AF/ac
		225-11-005			11	11	Alfalfa	20.8	105.49	107.43	106.22	107.97	114.14	541.26	108.25	5.20	
					12	12	Alfalfa	11.9	60.07	61.17	60.48	61.48	64.99	308.18	61.64	5.20	
		225-11-010			13	13	Alfalfa	24.2	122.89	125.14	123.73	125.77	132.96	630.49	126.10	5.20	
Sec 25		225-25-076			15	15	Alfalfa	21.4	108.41	110.40	109.16	110.96	117.29	556.22	111.24	5.20	
					16	16	Alfalfa	23.5	119.00	121.19	119.82	121.80	128.75	610.56	122.11	5.20	
					21	21	Alfalfa	24.1	122.29	124.54	123.13	125.16	132.31	627.43	125.49	5.20	
					22	22	Alfalfa	26.0	131.79	134.22	132.70	134.89	142.60	676.20	135.24	5.20	
					25	25	Alfalfa	24.0	121.79	124.03	122.63	124.66	131.77	624.89	124.98	5.20	
					26	26	Alfalfa	26.1	132.06	134.49	132.97	135.16	142.88	677.57	135.51	5.20	
		225-25-077			30	30	Alfalfa	36.9	186.84	190.27	188.13	191.23	202.15	958.62	191.72	5.20	
					31	31	Alfalfa	37.2	188.72	192.19	190.02	193.15	204.18	968.26	193.65	5.20	
					33	33	Alfalfa	17.8	90.02	91.67	90.64	92.13	97.40	461.86	92.37	5.20	
		225-25-026			34	34	Alfalfa	16.8	85.20	86.76	85.79	87.20	92.18	437.13	87.43	5.20	
Sec 30		225-09-052 & 225-09-020			24	24	Alfalfa	11.4	57.97	59.03	58.37	59.33	62.72	297.42	59.48	5.20	
					28	28	Alfalfa	11.0	55.56	56.58	55.95	56.87	60.12	285.08	57.02	5.20	
								426.35									
	Total Conserved														2,217.20	5.20	2,984.48
2013-04A	WPI-Hancock Farms AZ, LLC								5.07	4.34	5.10	5.19	5.48				
Sec. 7		224-07-028 & 224-07-027	13	383	1	12	Blended Crop	35.9	182.08	155.77	183.34	186.36	197.00	904.55	180.91	5.04	
								35.93									
	Total Conserved														180.91	5.04	251.50
2013-05	WPI-Hulet Farms AZ, LC								4.17	5.16	5.10	5.19	5.48				
Sec. 23		225-24-004	161	132	2	2	Blended Crop	14.03	58.45	72.42	71.60	72.79	76.94	352.20	70.44	5.02	
			161	132	3	3	Blended Crop	19.79	82.42	102.12	100.97	102.63	108.49	496.63	99.33	5.02	
								33.82									
	Total Conserved														169.77	5.02	236.73
2015-06C	WPI- R3 Farm AZ, LLC								5.07	5.16	5.10	5.19	5.48				
Sec. 11		224-42-014E			5	2W	Alfalfa	18.5	94.01	95.73	94.65	96.22	101.71	482.32	96.46	5.20	
					6	2E	Alfalfa	18.6	94.36	96.09	95.01	96.58	102.09	484.12	96.82	5.20	
					7	1W	Alfalfa	18.4	93.37	95.08	94.01	95.56	101.02	479.04	95.81	5.20	
					8	1E	Alfalfa	19.0	96.38	98.15	97.05	98.65	104.28	494.50	98.90	5.20	
					13	7W	Alfalfa	18.4	93.18	94.89	93.82	95.37	100.81	478.06	95.61	5.20	
					14	7E	Alfalfa	18.3	92.94	94.65	93.58	95.12	100.55	476.84	95.37	5.20	
					23	10E	Alfalfa	15.9	80.73	82.22	81.29	82.63	87.35	414.21	82.84	5.20	
		224-42-014G	4	12	15	8W	Alfalfa	17.8	90.25	91.91	90.87	92.37	97.64	463.04	92.61	5.20	
					16	8E	Alfalfa	17.9	90.74	92.41	91.36	92.87	98.17	465.55	93.11	5.20	
								162.98									
	Total Conserved														847.54	5.20	1,140.84
2018-01	WPI II-COL Farm AZ, LLC								5.07	Mix	5.10	5.19	5.48				
Sec 13		224-23-017	3	1	1	1	Blended Crop	18.3	92.67	58.08	93.31	94.85	100.27	439.19	87.84	4.80	
			3	1	2	2	Blended Crop	18.1	91.50	57.34	92.13	93.65	99.00	433.63	86.73	4.80	
			3	1	3	3	Alfalfa	29.2	148.02	150.74	149.04	151.50	160.15	759.46	151.89	5.20	
			3	1	4	4	Alfalfa	18.1	91.58	93.27	92.21	93.73	99.09	469.88	93.98	5.20	
								83.62									
									5.07	5.16	5.10	5.19	5.48				
Sec 33 & 34		216-18-002	88	88	1	1	Alfalfa	13.4	67.76	69.00	68.22	69.35	73.31	347.64	69.53	5.20	
					2	2	Alfalfa	17.4	88.30	89.92	88.91	90.37	95.53	453.03	90.61	5.20	

Entitlement	Farm Unit Name	Mohave County	FSA	FSA	FSA	Farmers	Crop Type History	Planted	2014	2015	2016	2017	2018	Total 5-YR CU	Average 5-YR	Average 5 -YR	Diversion Reduction
Contract No.		Parcel No.	Farm #	Tract #	Field #	Field #	by Field	Acres Per Year	CU by Crop History	CU by Crop History	CU by Crop History	CU by Crop History	CU by Crop History	Field History	Field History	per Acre History	7 AF/ac
					3	3	Alfalfa	13.3	67.59	68.83	68.05	69.18	73.13	346.78	69.36	5.20	
					4	4	Alfalfa	13.9	70.34	71.63	70.82	71.99	76.10	360.88	72.18	5.20	
								58.01									
								141.63									
	Total Conserved														722.10	5.10	991.41
	Total Acres Followed in 2020							1,196.0									
	Total Acre Feet Conserved in 2020														6,137.39		8,371.83
	Crop planted Alfalfa																
	Crop planted Bermuda Grass																
	Crop planted Cotton																
	Crop planted Sudan Grass																
	Crop planted Hay																
	Crop planted Sudan Grass, followed by September Alfalfa																

Exhibit 3  
Table of Priority 1 and 4 Rights  
in Participating Farm Units

Farm Unit Name	Parcel No.	Field No.	Participating acres	PPR Water AF	4th Priority Water	5-YR CU History	PPR Water CU	4th Priority Water
Section 13 - Miller PPR = 0.375 AF/ACRE				5.36%	94.64%			
Contract 1989-05 Nancy Vanderslice, Trustee	224-23-015	2	36.64	13.74	242.74	190.53	10.21	180.32
Contract 2018-01 WPI II-COL Farm, LLC	224-23-017	1	18.30	6.86	121.24	87.84	4.71	83.13
		2	18.10	6.79	119.91	86.73	4.65	82.08
		3	29.20	10.95	193.45	151.89	8.14	143.75
		4	18.10	6.79	119.91	93.98	5.04	88.94
Section 31 - Sherrill/Lafollette PPR = 3.1425 AF/ACRE				44.89%	55.11%			
Contract 2009-04 Green Acres Mohave, LLC	225-09-047	6	6.10	19.17	23.53	31.69	14.23	17.46
Section 23 - Zozoya PPR = 6.79 AF/ACRE								
Contract 2013-05 WPI-Hulet Farms AZ, LLC	224-24-004	2	14.03	95.26	0.00	70.44	70.44	0.00
		3	19.79	134.37	0.00	99.33	99.33	0.00
Total PPR Water							216.74	
Total 4th Priority Water								595.68



Exhibit 4  
Table of Acres Planted 2014-2018

**Exhibit 4. Agricultural Acreage Limitation Calculation**

Owner	Total Acres	2018- Irrigated	2017- Irrigated	2016- Irrigated	2015- Irrigated	2014- Irrigated	Max- Irrigated
BALDWIN KENNETH L & JOELLA J TRUSTEES	37.4	37.4	37.4	37.4	37.4	37.4	37.4
BECKNELL DEVELOPMENT LLC	119.1	119.1	119.1	119.1	119.1	119.1	119.1
BLACK MOUNTAIN FARMS LLC	28.1	28.1	28.1	-	-	-	28.1
BLM	99.2	99.2	99.2	99.2	99.2	99.2	99.2
DL18 LLC	2.1	2.1	2.1	2.1	-	2.1	2.1
GREEN ACRES MOHAVE II LLC - Sec 3 E Fields	92.0	92.0	92.0	92.0	92.0	92.0	92.0
GREEN ACRES MOHAVE LLC- Sec 3N & Sec 31 Fields	307.5	301.6	301.6	301.6	301.6	301.6	301.6
GREEN ACRES MOHAVE LLC- Sec 3 SW Fields	102.6	73.0	73.0	73.0	73.0	73.0	73.0
Jeremiah Perkins	3.2	3.2	3.2	3.2	3.2	3.2	3.2
JIHONG KAI LLC	175.7	135.3	114.0	114.0	114.0	175.7	175.7
John Kai & Jihong Trustees	131.1	-	-	-	-	-	-
KAI HERBERT - Sec 9	215.3	-	215.3	215.3	215.3	206.5	215.3
KAI HERBERT - Sec 13	134.5	-	-	-	134.5	134.5	134.5
Mark Kelley & Beverly Kelley Trustees	19.3	12.0	12.0	3.8	12.0	12.0	12.0
MAVERICK FARMS INC - Sec 25	7.3	7.3	7.3	-	-	-	7.3
MOHAVE COUNTY	14.0	14.0	14.0	14.0	14.0	-	14.0
MOHAVE VALLEY SCHOOL DIST #16	7.9	7.9	7.9	7.9	7.9	7.9	7.9
Richard Park	6.1	5.4	5.4	5.4	5.4	5.4	5.4
SHERRILL CHARLES B JR	22.0	22.0	17.3	17.3	17.3	17.3	22.0
SHERRILL CHARLES B JR/MAVERICK - Sec 35	4.5	4.5	4.5	4.5	4.5	4.5	4.5
SHERRILL VENTURES LIMITED PARTNERSHIP	86.2	86.2	86.2	-	-	-	86.2
SHERRILL VENTURES LIMITED PARTNERSHIP - WEST	287.9	287.9	287.9	287.9	287.9	287.9	287.9
SHERRILL VENTURES LLLP - EAST	138.4	138.4	138.4	138.4	138.4	138.4	138.4
SMK LIMITED PARTNERSHIP	2.9	2.9	2.9	2.9	-	2.9	2.9
Suzanne Evans	5.6	-	2.6	2.4	2.5	-	2.6
TROPICANA RANCH LLC	152.6	152.6	152.6	133.8	86.8	86.8	152.6
VACKAR ANTHONY & CHERIE TRUSTEES	22.3	22.3	22.3	22.3	7.8	19.8	22.3
VANDERSLICE NANCY & JOHN CLAY CO-TRUSTEE	108.0	108.0	108.0	108.0	108.0	108.0	108.0
WPI HULET FARM AZ LLC	105.3	105.3	105.3	105.3	105.3	105.3	105.3
WPI II-COL FARM AZ LLC	271.5	271.5	210.1	213.5	271.5	264.5	271.5
WPI-919 FARM AZ LLC	847.3	847.3	847.3	847.3	847.3	847.3	847.3
WPI-919 FARM AZ LLC- South	108.1	108.1	108.1	-	-	-	108.1
WPI-CAD FARM AZ LLC	193.9	193.9	193.9	-	-	-	193.9
WPI-HANCOCK FARMS AZ LLC	138.4	138.4	138.4	138.4	138.4	138.4	138.4
WPI-JEROME FARM AZ LLC	146.1	146.1	139.2	-	-	-	146.1
WPI-R3 FARM AZ LLC	310.0	310.0	310.0	310.0	310.0	310.0	310.0
WPI-TAC FARM AZ LLC	110.2	110.2	110.2	89.2	64.9	35.9	110.2
<b>Sum</b>	<b>4,563.9</b>	<b>3,993.5</b>	<b>4,116.9</b>	<b>3,509.3</b>	<b>3,619.1</b>	<b>3,636.5</b>	<b>4,386.2</b>

Acreage limitation is calculated by determining the highest planted acreage in MVIDD by farm unit in the last five years (2014-2018).