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SWC-IGWA Term Sheet Implementation – Technical Workshop
Implementation Recommendations

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Settlement Agreement Term Usage

Language in the Term Sheet:

- “Consumptive Use Volume Reduction” (3.a)
- “Total ground water diversion shall be reduced...” (3.a.i)
- “...total annual ground water reduction...” (3.a.ii)
- “...ground water diversion reductions...” (3.e.iv)
- “...consumptive use reductions...” (4.a)

= ?

Diversion Based?
Consumptive Use Based?
Other?

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Options For Establishing Baseline and Annual Tracking of Reductions

<u>Diversion Records</u>	<u>ET</u>
<ul style="list-style-type: none"> ➤ WMIS Database <ul style="list-style-type: none"> ▪ 2010-2014 ▪ single variable ▪ Measures total water withdrawal ▪ Can approximate consumptive use, but also includes non-consumptive use ▪ Historical data incomplete ▪ Consistency of data questions ▪ Water user involved ▪ Available in real-time 	<ul style="list-style-type: none"> ➤ METRIC <ul style="list-style-type: none"> ▪ 2009-2011 ▪ Multiple variables ▪ Measures transpiration & evaporation ▪ Currently takes one year after irrigation season to process ➤ NDVI <ul style="list-style-type: none"> ▪ 2010-2014 ▪ Multiple variables ▪ Measures biomass ▪ Currently takes four months after irrigation season to process

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Diversion Records



- Considerations for relying on historical diversion data in the WMIS database to set a baseline condition?
 - Measurements include diverted water that is
 - Consumptive to the ESPA
 - Non-consumptive to the ESPA
 - Ratio inconsistent in time and beyond field scale
 - Realities of diversion dataset
 - Missing data
 - High historical reliance on PCC methods
 - Inaccurate data
 - Inaccuracies are random (creates winners and losers at the field scale)
 - PCC data changes from year to year independent of changing irrigation operations

Diversion Data is Still Important

- The SWC-IGWA Term Sheet (Section 3d) requires installation of meters
- Idaho law requires assessments derived from diversion data (I.C. §42-613)
- Future high confidence data can lead to simplified Term Sheet tracking (>2018)
- Data are collected in real-time and provide accountability & transparency to other surface and groundwater users
- ET cannot identify source of water (i.e. supplemental use, soft conversions, etc)
- ET cannot be calculated in some years due to cloud interference
- For many groundwater irrigation systems on the ESPA, their diversion approaches the consumptive use to the aquifer
- Secondary Benefit: Users who have installed meters say the instantaneous data improves their irrigation water management

Availability of Consumptive Use Analysis Input Variables

	Landsat Images	AgriMet Data	Irrigated Land Shapefile	GW Fraction	METRIC	NDVI
2004	X	X				
2005	---	X				
2006	X	X	X		X	
2007	---	X				
2008	X	X	X		X	
2009	X	X	X		X	
2010	X	X	X		X	
2011	X	X	X*		X	
2012	---	X				
2013	X	X			X*	
2014	X	X				X

--- Too many clouds in Landsat images to calculate ET
 * In Progress

- All of the necessary input data are available to calculate Consumptive Use for groundwater irrigators in the ESPA, except for Groundwater Fraction.
- Determination of GW Fraction leads to highly accurate irrigated lands number (possible basis for proportionment of 240,000 AF requirement)

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Possible Implementation Plan






Baseline Determination

Alternative 1: Consumptive Use Analysis

- Recommendation for water user scale
- Historical METRIC (2009, 2010, 2011)
- Historical Irrigated Land Shape File (2009, 2010, 2011)
- Ground water fraction (2015)*
- Implement 240,000 acre-foot reduction of consumptive use

Alternative 2: Diversion Data

- Recommendation for Ground Water District Scale
- Diversion Data (2012, 2013, 2014)
 - In fill missing years, if necessary, with 2010 and/or 2011
- Implement 276,000 acre-foot reduction of diversions

**Requires detailed determination of water source identification for each irrigated shape (i.e. field). Department, GWD, water user joint effort. 2-4 months BCS.*

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Possible Implementation Plan






240,000 Acre-Foot Proportionment

Alternative 1: Ground water irrigated acres (2015)*

- $Obligation = [(GWD \text{ I.A.}) / (\text{Total I.A.})] \times (\text{Total I.A.})$

Alternative 2: Average Consumptive Use (2009, 2010, 2011)

- Historical METRIC (2009, 2010, 2011)
- Historical Irrigated Land Shape File (2009, 2010, 2011)
- Ground water fraction (2015)*
- $Obligation = [(GWD \text{ C.U.}) / (\text{Total C.U.})] \times (\text{Total C.U.})$

**Requires detailed determination of water source identification for each irrigated shape (i.e. field). Department, GWD, water user joint effort. 2-4 months BCS.*

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Possible Implementation Plan

Annual Performance Review

Years 1-3: NDVI-based Consumptive Use Analysis

- NDVI calculated each year (November - February)
- Updated Land Shape File (November - February)
- Updated Ground Water Fraction (November - February)

Year 1 Alternative: Flat 2 AF reduction per dried acre

- Drying equals: fallowing, conversion, end gun removal
- Submit maps before start of irrigation season identifying acres

Years 4, 5: Consumptive Use Analysis and Diversion Data

- NDVI-based consumptive use analysis (see above)
- Correlate diversion data and consumptive use data

Years >6: Diversion data with occasional consumptive use comparison

- Use correlation from years 4 and 5, rely on diversion data
- Periodically run consumptive use analysis to verify correlation

QUESTIONS?