

Peer-to-Peer June 2, 2021

METER TO PARCEL PROJECT

Enrique Zanetti Senior Water Efficiency Analyst

Melody Seesangrit Water Efficiency Analyst

PRESENTATION AGENDA

- IRWD facts
- Meter to Parcel Project
 - Objectives
 - Background
 - Methodology
 - Combining Data Sources
 - Final Product
 - Future Application
 - Next Steps

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• Q&A





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IRWD FACTS

IRVINE RANCH WATER DISTRICT FACTS





181 square miles 20% of Orange County



600,000 Daytime population **425,000** Residents served



Six cities served

- Irvine
- Lake Forest
- Newport Beach
- Tustin
- Costa Mesa
- Orange
- Unincorporated Orange County

IRVINE RANCH WATER DISTRICT FACTS



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85 Villages



125,400 Water connections



107,282

Water connections serve landscape



Budget-based rate structure

Indoor budget + Outdoor budget



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OBJECTIVES

OBJECTIVES

Improve the District's data accuracy of irrigated landscape area

Provide an alternative methodology to the Department of Water Resources' (DWR) approach for calculating outdoor water budgets







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BACKGROUND

BACKGROUND

The fundamental challenge for determining equitable water budget is having highly accurate data

Until now, the District knew the irrigated landscape area associated with each water connection, but it did not always know where that area was spatially located.

In 2017 the District began this project to geolocate the landscape area served by each water connection

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Symbol	Service Connection ID	Service Type	System	Irrigated Landscape Area (acres)	AGRICULTURE BIO ^{IN}	ARTIFICAL TURF (H1-R)	HORSE CORRALS AND ARENAS (He R)	IMIGATED LANOSCAPE - LANAQTURA D-0-FE	IRRIGATED LANDSCAPE NON TURP(14) ft)	NOUNAL LANDS (HE R)	OPENMATER (H4-R)	POTENTIALLY IRREGATED (Hq.R)	54/MM/NG P0013 (self)			
•	6795650408	Landscape Irrigation Water	Recycled	0.928				5,275	15,154					-	£	
•	8307750584	Landscape irrigation Water	Recycled	1.019				6.03	37,550					10		ł
•	8620730606	Landscape Irrigation Water	Recycled	0.904				329	40,344					1		
•	0962750075	Residential Single-Family Water & Sewer	Potable	0.173				554	6,524				479			
•	3882750071	Residential Single-Family Water & Sewer	Potable	0.062					2,718							
	4883750072	Residential Single Family Water & Sewer	Potable	0.053					3,997				303			
A	4982750076	Residential Single-Family Water & Sewer	Potable	0.130					5,162				484			
	5882750073	Residential Single Family Water & Sewer	Potable	0.043					1,617				210			
	6883750034	Residential Single Family Water & Sewer	Potable	0.040					1,689				38	-		

Legend Water Connection U-R-W R-SF-WS Land Use Classification Irrigated Landscape - Lawn/Turf Irrigated Landscape - Non-Turf Swimming Pools



DATA & SOFTWARE REQUIREMENTS



TIMELINE

2017

Project commences

Hired two temporary employees for field verification

Eagle Aerial provided landscape classification.

2019

January - Hired Recycled Water Contractors for additional field mapping December - Added two additional temporary

employees

2021

March – field component complete

January – first field survey completed February – Completed in-office portion

2018

March – transition to work from home







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METHODOLOGY

METHODOLOGY – PREPARING DATA

Identify water connections serving landscape in the billing system (107,282 connection to map)

Classify the water connections into two groups according to whether they will require field validation to create the map or not

In-Office mapping (≈ 98,000 connections)

Residential single-family, residential multi-family individual and master metered with no common landscape area

In-Field mapping (≈ 9,000 connections)

Dedicated landscape irrigation, commercial-industrial-institutional mixed use, agricultural and residential multi-family master metered with common landscape area.

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METHODOLOGY - IN-OFFICE MAPPING PORTION

In-Office mapping (~ 98,000 connections)

Meter to parcel relationship

One-to-one

- About 63,800 water connections
- The parcels are used as a starting point to define the landscape area associated with each water connection

Many-to-one

ne Ranch

- About 34, 200 water connections.
- The parcels cannot be used as a starting point to define the landscape area associated with each water connection.
- The landscape area associated with those connections cannot be mapped at this stage.





METHODOLOGY -LINKING PARCEL WITH SERVICE CONNECTION

Joining tables by address

- Advantage:
 - Address is unique
- Disadvantage:
 - The address may need to be standardized

Joining tables by owner name

- Second option if address didn't match
- Disadvantages:
 - The owner's name is not unique
 - Both databases allow multiple owners
 - It requires a second step to validate the link

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Parcel Data

PARCELAPN	TAXAPN	OWN1			
449-131-10	449-131-10	Zaneti, Enrique			
449-131-11	449-131-11	Zanetti, Enrique			

Billing Sytem: Service Agreement

SERVICE CONNECTION ID	SERVICE AGREEMENT ID	CUSTOMER NAME			
3021100365	R021100365	Zanetti, Enrique			
2021100364	R021100364	Zanetti, Enrique			



Result of the inner join of both tables by owner name corrected by the shorter distance

PARCELAPN	TAXAPN	OWN1	SERVICE CONNECTION ID	SERVICE AGREEMENT ID	DISTANCE
449-131-11	449-131-11	Zanetti, Enrique	3021100365	R021100365	15 t
449-131-10	449-131-10	Zanetti, Enrique	2021100364	R021100363	22 t.



COMPLETING THE FIELD MAPPING PORTION

Connections requiring field validation were assorted by village or large clients

Send outreach letter to account holder requesting contact for landscape contractor or existing irrigation maps

Call account holder and request contact for landscape contractor or existing irrigation maps

Use data from submitted map or field visit to draw polygon in GIS attaching the meter to the irrigated area



METHODOLOGY - FIELD SURVEY

Explain field activities and gather possible irrigation maps

Locate water meter and gather data

Locate irrigation controllers

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Run irrigation stations and draw a polygon

Upload the map into GIS collector and link it with the service connection



COMBINING DATA SOURCES



COMBINING DATA SOURCES

Imported data layers:

- Field verification
- Parcel assessor data (residential parcels)
- Meter
 - Service connection type
 - Service connection ID
 - Service address

Created data layers:

- Additional residential parcels
- Commercial pools
- Construction
- Not irrigated



COMBINING DATA SOURCES

Field data takes prevalence over in-office data

Extend residential parcel to cover gaps

Cut residential parcel when overlapping

Fill gaps in residential areas

Resolve potential issues in data with the field teams





COMBINING DATA SOURCES



Extend parcels

Cut parcels



Create parcels

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VILLE RANCH

POOLS, CONSTRUCTION, AND GAPS



Commercial pools



New construction

Field review

Nater DISTRICT



FINAL PRODUCT

FINAL PRODUCT





DATA COMPARISON







Final product

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IMPROVED DATA ACCURACY OF IRRIGATED LANDSCAPE AREA



Symbol	Service Connection ID	Service Type	System	Irrigated Landscape Area (acres)	AGRICULTURE (sq-ft)	ARTIFICIAL TURF (sq-ft)	IRRIGATED LANDSCAPE LAWN/TURF (sq-ft)	IRRIGATED LANDSCAPE NON-TURF (sq-ft)	POTENTIALLY IRRIGATED (sq-ft)	NATURAL LANDS (sq-ft)	OPEN WATER (sq-ft)	POTENTIALLY IRRIGATED (sq-ft)	SWIMMING POOLS (sq-ft)
\land	14853A0495	Landscape Irrigation Water	Recycled	5.16	2	-	78,378	329,897	13,168	-	840	140	22



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CUSTOMER TYPE VERIFICATION

DWR Data: Parcels selected based on Land Use Codes

IRWD Data: landscape areas created based in field mapping, parcel data and aerial imagery





ADDITIONAL BENEFITS FOR THE DISTRICT

Improve accuracy of GIS data

Improve accuracy of billing data

Identify illegal connections







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FUTURE APPLICATIONS

DESIGN AND TARGET WATER EFFICIENCY PROGRAMS



Query: extract residential houses with pool inside Greentree village

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EVALUATION OF LANDSCAPE CHANGES OVER TIME





2020

Ranch

PROPERTY DATA



SERVICE CONNECTION ID	3021100365
CUSTOMER NAME	Zanetti, Enrique
PARCELAPN	449-131-11
TAXAPN	449-131-11
YEAR BUILT	1971
BEDROOMS	4
TOTAL BATH	2
PARTIAL BATH	1
LAST SOLD	1991

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OTHER APPLICATIONS

Billing database

Maps of irrigated area

Water waste report





NEXT STEPS

NEXT STEPS

Verify accuracy

Continuous improvement

Incorporate new accounts

Evaluation of benefits

Evaluation of future applications





QUESTIONS?

THANKYOU!

Enrique Zanetti Senior Water Efficiency Analyst zanetti@irwd.com 949-453-5457

Melody Seesangrit Water Efficiency Analyst seesangr@irwd.com 949-453-5530

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