EXHIBITOR DIRECTORY

8th Annual AgTech Day October 25, 2024

Showcasing Innovative Technology in Field Demos and Educational Presentations

Hosted by the Center for Irrigation Technology (CIT)

Advanced Pumping Efficiency Program (APEP) ● Water, Energy and Technology (WET) Center

THANK YOU TO OUR SPONSORS, SPEAKERS & EXHIBITORS FOR YOUR SUPPORT!

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Demonstration Site Speaker
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TechnoFlo / Seametrics

Water Sponsor

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WiseConn

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FIELD SITE #1
Electrification In Agriculture

Sponsored by

MONARCH®

Speakers

Brian Lopez, Monarch Tractor

Valerie Thorsen, CALSTART

Site Description

Brian Lopez will lead an exclusive showcase sponsored by Monarch Tractors. Witness the world's first fully electric, driver-optional, autonomous tractor in action. Experience cutting-edge technology that is revolutionizing agriculture. Valerie Thorsen from CALSTART will discuss California's electrification goals and rebate programs. Farmers interested in the future of clean climate action will discover how these initiatives are shaping the future of sustainable farming and supporting innovation in agricultural technology. *Let us help you navigate your switch to zero-emission vehicles.*

Monarch Tractor
Demonstration Site Sponsor
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CALSTART
Demonstration Site Speaker
Website: www.calstart.org
Contact: Valerie Thorsen
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CALSTART, a non-profit global leader in accelerating clean energy transportation and mobility, administers a host of integral programs in California and provides technical resources to help navigate zero-emission transitions. For farmers interested in the future of clean climate action, the **Clean Off-Road Equipment Voucher Incentive Project (CORE)** is a multi-million incentive project intended to encourage California off-road equipment users to purchase or lease currently commercialized zero-emission off-road equipment. **Cal Feet Advisor** provides free guidance for transitioning to zero-emission vehicles. *Let us help you navigate your switch to zero-emission vehicles.*

MK-V TIRE SPECIFICATIONS

100% Electric | Driver Optional | Data–Driven

Monarch Part	R1 Alliance A-370 / FarmPRO 324	R14 Goodyear R14T	R4 Galaxy Marathoner	R3 Galaxy Garden Pro XTD
Monarch SKU	M-A-TWAS-MKV-R1AAF-TS4	M-A-TWAS-MKV-R14GY-TS4	M-A-TWAS-MKV-R4GM-TS4	M-A-TWAS-MKV-R3GGP-TS4
Tractor Configuration Upgrade Price (Shipping and Installation Included if ordered with Tractor)	Included in Tractor Price	+$1,800*	+$600*	+$1,000*
Accessory Set Price - Tractor Tire/Wheel Assembly (Set of 4) (Shipping extra, Installation not included) *Starting at	$1,699*	$3,499*	$2,299*	$2,699*

Dimensions in. (mm)	R1 Alliance A-370 / FarmPRO 324		R14 Goodyear R14T		R4 Galaxy Marathoner		R3 Galaxy Garden Pro XTD	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Unloaded Outer Diameter	27 (686)	43.5 (1105)	27.3 (692)	41.4 (1052)	26.7 (678)	42.2 (1072)	27 (686)	42 (1068)
Unloaded Static Width	7.8 (198)	11.2 (285)	8.9 (226)	12.6 (320)	8.4 (213)	16.1 (409)	8.5 (216)	15.9 (404)
Statically Loaded Radius	12.4 (315)	20.5 (520)	12.5 (318)	18.7 (476)	12.7 (322)	19.4 (495)	12.5 (318)	19 (483.1)
Rolling Circumference	81.5 (2069)	131.6 (3343)	81 (2061)	125 (3178)	84 (2134)	128.7 (3268)	78.9 (2004)	125.9 (3198)
Tractor Minimum Overall Width	48.4 (1229)		54.2 (1377)		59.4 (1509)		59.2 (1504)	
Available Track Widths	37.0 (939)	36.0 (916) 40.6 (1,030) 43.9 (1,116) 48.4 (1,230)	38.9 (988)	42.1 (1069)	38.9 (988)	45.5 (1156)	38.9 (988)	45.5 (1156)

Sizes/Specifications	R1 Alliance A-370 / FarmPRO 324		R14 Goodyear R14T		R4 Galaxy Marathoner		R3 Galaxy Garden Pro XTD	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Manufacturer	Yokohama		Titan		Yokohama		Yokohama	
Brand	Alliance		Goodyear		Galaxy		Galaxy	
Model	A-370	Farm PRO 324	R14T		The Marathoner		GARDEN PRO XTD	
Tread Designation	R-1W	R-1	R-1		R-4		R-3+	
Size	200/70R16	11.2-24	27x8.50-15	320/85R20	27.8.5-105	4.3x16.00-20	215/70R15	400/70R20
Rim Size	W6 x 16	W10 x 24	7JA x 15	W11 x 20	7 x 15	13 x 15	7 x 15	13 x 15
Load Index & Speed Symbol	94A8/94B	116A8	102A8	119D	96B/100A6	120A6	90A6/90B	130A8/130B
Tire Type	TL	TL	TL	TL	TL	TL	TL	TL
Tire Construction	Radial	Bias	Bias	Radial	Bias		Radial	

Product Key Features	R1 Alliance A-370 / FarmPRO 324	R14 Goodyear R14T	R4 Galaxy Marathoner	R3 Galaxy Garden Pro XTD
	• Modern curved 25 degree design for both on and off road applications. • Superior traction during field operations • The large tire footprint area reduces average ground pressure, minimizing soil compaction and increases flotation abilities • Rim allows for adjustable rear track width for different crops and row widths	• Continuous arc bar angle and shape inspired by the premium Goodyear Optitrac R-1W line, provides unparalleled traction and cleaning • High lug-to-void ratio perfect for hard surface applications with a lug designed for cleaning and traction in softer soils • Designed for minimal ground disturbance ideal for lawn, turf, and sandy soil application • The perfect hybrid between a R-1 and a R-4	• Designed to provide outstanding wear characteristics and offer great pulling power • The Marathoner features Galaxy's "Mud Breakers," designed to eject mud from the tread • Ideal for hard surface applications, both on and offroad	• A mixed-service radial tire developed specifically for small tractors used in gardening, orchards, and vineyards • Features nearly 50 per cent greater tread depth than typical R-3 tires, and a solid-to-void ratio of 49:51 per cent - substantially more than typical R-1 or R-4 tires

Manufacturer Data	Yokohama Alliance		Titan GoodYear		Yokohama Galaxy		Yokohama Galaxy	
	R1 Alliance A-370	FarmPRO 324	Goodyear R14T	Goodyear R14T	The Marathoner	The Marathoner	Garden Pro XTD	Garden Pro XTD

MONARCH®

MK-V CHARGER SPECIFICATIONS

100% Electric | Driver Optional | Data–Driven

Monarch SKU	M-A-L2C-40A-N1450-EP	M-A-L2C-64A-HW-EP	M-A-L2C-80A-HW-CC
Monarch Part Description	EV Charger, 40A NEMA 14-50 - Enphase	EV Charger, 64A Hardwired - Enphase	EV Charger, 80A Hardwired Clipper Creek
Monarch Selling Price	$835/-	$1,176/-	$2,195/-
Shipping and Installation	Not Included	Not Included	Not Included
Picture			

Product Key Features

M-A-L2C-40A-N1450-EP	• Provides up to 40 A charging via the J1772 Connector • Includes wall mounted J1772 connector holster • Type 4X watertight and corrosion-resistant rubber over-molded EV connector • Includes an industrial grade NEMA 14-50R outlet receptacle
M-A-L2C-64A-HW-EP	• Provides up to 64 A charging via the J1772 Connector • Includes wall mounted J1772 connector holster • Type 4X watertight and corrosion-resistant rubber over-molded EV connector
M-A-L2C-80A-HW-CC	• Provides up to 80 A charging via the J1772 Connector • Includes J1772 connector holster
All of the Above	• LED lights to indicate charger status • Industry-leading 25-foot charging cable • Integrated cable wrap helps to neatly stow away the cable cord when not in use • Comprehensive safety and efficiency compliance and certifications, including ENERGY STAR® Certified ETL listing.

Charge Time and Power	M-A-L2C-40A-N1450-EP	M-A-L2C-64A-HW-EP	M-A-L2C-80A-HW-CC
Approximate Charge Time (from 5% to 95%)	10-12 hours	6.25-7.5 hours	5-6 hours
Maximum Output Current	40 A continous	64 A continous	80 A continous
Maximum Output Power	9.6 kW	15.4 kW	19.2 kW

Electrical Specification	M-A-L2C-40A-N1450-EP	M-A-L2C-64A-HW-EP	M-A-L2C-80A-HW-CC
Input Voltage (Input Voltage Range)	208/240 VAC (185 VAC – 264 VAC)		
Input Power Phase	Single Phase		
Circuit Breaker Requirement	Dedicated, 2-pole 50 A	Dedicated, 2-pole 80 A	Dedicated, 2-pole 100 A
Plug Type	NEMA 14-50	Hardwired (Electrician Installed)	
Input Cable Length	12" (304.8 mm)	3' (914.4 mm) Pre-wired with (L1, L2, Gnd) 8 AWG service whip provided	Premise wiring not included. To be sized by licensed electrician.

Mechanical and Environmental	M-A-L2C-40A-N1450-EP	M-A-L2C-64A-HW-EP	M-A-L2C-80A-HW-CC
Enclosure Dimensions (L × W × D)	19.7" × 8.9" × 5.3" (500 mm × 226 mm × 135 mm)	19.7" × 8.9" × 5.3" (500 mm × 226 mm × 135 mm)	22" × 17" × 12" (559 mm × 432 mm × 304.8 mm)
Weight	13.5 lbs. (6.1 kgs)	17.8 lbs. (8.1 kgs)	45 lbs. (20.4kgs)
Environmental Rating	Indoor and Outdoor Rated		
Operating Temperatures	-22°F to 122°F (-30°C to 50°C)		
Enclosure Rating	Rugged, fully sealed NEMA Type 4 - watertight station		

Warranty	M-A-L2C-40A-N1450-EP	M-A-L2C-64A-HW-EP	M-A-L2C-80A-HW-CC
	5 years	5 years	1 year

Manufacturer Data: Enphase	M-A-L2C-40A-N1450-EP	M-A-L2C-64A-HW-EP	M-A-L2C-80A-HW-CC
Manufacturer SKU	HCS-50R-C29-P6-L25-283	802.11ac Dual Band	CS-100-C16-L25-107
Manufacturer Part Description	40 A Charger (HCS-50R)	64 A Charger (HCS-80R)	80 A Charger (CS-100)
Manufacturer Link	HCS-50R Web Link	HCS-80R Web Link	CS-100 Web Link
Manufacturer Data Sheet	HCS-50R Data Sheet	HCS-80R Data Sheet	CS-100 Data Sheet
Installation User Manual	HCS User Manual		CS-100 User Manual

MONARCH®

MK-V HARDWARE SPECIFICATIONS

100% Electric | Driver Optional | Data–Driven

Power		XLR	LR
Peak Motor Power	hp (kW)	70 (52)	
Rated Motor Power	hp (kW)	40 (30)	
Run Time	hrs	est. 14*	est. 7*

*varies based on farm, operation, and implement

Drive Train		
Type		4 Wheel Drive
Transmission		Push Button Transmission
Number of Speeds		9F / 3R
Clutch Type		Wet
Clutch Actuation		Automated Electro-hydraulic
Brake Type		Wet, Independent
Brake Actuation		Mechanical / Electro-hydraulic

Power Take-Off		
PTO Power	hp (kW)	40 (30)
PTO Speed	rpm	540
PTO Location		Rear
PTO Clutch Type		Wet
PTO Actuation		Electro-hydraulic

Hydraulics		
Type		Closed Center
Pump Rated Output	gpm (l/min)	19.8 (75)
Rated Flow (for Constant Flow)	gpm (l/min)	12.0 (45)
Rear Remote Valves		2 SCVs + 1 Constant Flow

Implement Interface		
3-Point Hitch		CAT I/II
Hitch Lift Capacity, 24 in. behind lift point	lbs (kg)	1,650 (750)
Drawbar Type		Swinging, 3 positions
Drawbar Towing Capacity	lbs (kg)	5,500 (2,500)
Drawbar Max. Vertical Load	lbs (kg)	1,100 (500)
Front Ballast Capacity	lbs (kg)	up to 528 (240)

Tires	
Tire Type	R1 AG
Front Tires	200 / 70R16 Tubeless
Rear Tires	11.2-24 Tubeless

Charging and Exportable Power		XLR	LR
Charge Port		J1772 Type 1 (up to 80 A)	
Charging Level		AC Level 2	
Charging Time (w/ 80 A Charger)	hrs	5	2.5
Charging Time (w/ 40 A Charger)	hrs	10	5
220 VAC Power Outlet		NEMA L6-30R (18A)	
110 VAC Power Outlet		NEMA 5-15 (15A)	

Roof		
ROPS		Rigid, 4-Post
LED Work Lights		8x (2x per side)
LED Work Light Brightness, each	lumens	2,000

Connectivity Modules	
WiFi	802.11ac Dual Band
Cellular	4G (LTE) Ready
Radio	Lora - 900 Mhz - 30 Dbi Ready

Dimensions		
Overall Tractor Length	in (mm)	146.7 (3,725)
Overall Tractor Height	in (mm)	92.1 (2,340)
Minimum Tractor Width	in (mm)	48.4 (1,230)
Roof Width	in (mm)	51.8 (1,315)
Wheelbase	in (mm)	85.0 (2,160)
Front Axle Clearance	in (mm)	11.0 (280)
Front Track Width	in (mm)	37.0 (939)
Rear Track Width (Adjustable)	in (mm)	36.0 (916) 40.6 (1,030) 43.9 (1,116) 48.4 (1,230)
Turning Radius	ft (m)	8.9 (2.7)
Base Weight	lbs (kg)	5,750 (2,610)

Warranty		
Tractor	years / hrs	4 / 4,000*
Battery	years / hrs	8 / 8,000

*extended warranty available for CORE customers

FIELD SITE #2
Irrigation Automation

Sponsored by

RUBICON™

Speakers

Eric Rothberg, Rubicon Water

Bill Green, Center for Irrigation Technology

Site Description

On-farm automation is becoming more prevalent in California. Most automation is associated with deep well pumps and irrigation systems, however, surface water deliveries can also be tracked utilizing automation. Rubicon manufactures this type of equipment including automated gates and flow measurement. Eric Rothberg will show where this equipment can help monitor, track, and direct surface water flows for efficient water delivery. Bill Green from the Center for Irrigation Technology at Fresno State will discuss how this type of equipment can assist growers in complying with California regulations and decreasing labor, energy, and water costs.

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Center for Irrigation Technology
AgTech Day Host
Website: https://jcast.fresnostate.edu/cit/
Contact: Charles Hillyer
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Eric Rothberg joined Rubicon Water in 2020. His current role is Sales Manager for North America. His focus has been on the canal / irrigation district side of the business. He is also involved in the on-farm (FarmConnect) side of the business helping Peter Moller (On-Farm BDM).

Prior to Rubicon Water, Eric worked in various capacities in industries such as Agri-Business, Irrigation, Mining, Power Generation, Municipal Water, and Oil & Gas. Some of the companies Eric worked for include Grundfos, Lakos, and Danaher. He has worked extensively in Latin America, The Middle East, and North America. Eric has a degree in Agricultural Engineering and an MBA, and is Fluent in Spanish and Portuguese.

Eric's profile can be viewed at: https://www.linkedin.com/in/ericrothberg/

William Green

Bill Green graduated from California State University, Fresno in 1980 with a Bachelor of Science degree in Agricultural Plant Science. Before joining Fresno State, he was a Field Operations Manager and a General Manager for orchard and vineyard farming companies near Fresno for 22 years. Bill began working at the Center for Irrigation Technology (CIT) in 2002 as the Education Manager for many different programs including the Advanced Pumping Efficiency Program (APEP), the Department of Water Resources (DWR) "Irrigation Tech Water Use Efficiency" seminar series, and Chemigation/ Groundwater Protection training for the California Department of Pesticide Regulation. Many of the educational events, including today's AgTech Day presentation, use a Mobile Education Center (MEC) that he helped design and build. Bill has conducted applied research studies at Fresno State including topics related to farm management, cultural practices, chemigation, water and energy use efficiency.

FIELD SITE #3
Groundwater Recharge (SSAGR)

Sponsored by

Speakers

Mike Busby, LIDCO Inc.

Gabriela Bonilla, Fresno State Alumna

Site Description

Groundwater recharge is a hot topic in California water circles. Mike Busby will discuss Reverse Tile Drains, a method for recharging groundwater that allows land to stay productive. This recharge method is similar to a tile drainage system but operated in reverse. LIDCO pipe was installed on a Fresno State Farm Laboratory site as part of a research project led by Fresno State's Dr. Cordie Quallie. Busby will showcase the type of pipe used and how individual growers can install this system to bolster recharge efforts in California. Gabriela Bonilla was a member of the research team using buried pipe to inject surface water deliveries in permeable sandy soil. She will demonstrate recharge methodology and equipment and present the results and conclusions after three years in the field.

LIDCO Inc.
Demonstration Site Sponsor
Website: www.LIDCOInc.com
Contact: Mike Busby
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Email: Busby@LIDCOInc.com

Shallow Subsurface Artificial Groundwater Recharge (SSAGR)
Demonstration Site Speaker
Contact: Gabriela Bonilla
Email: gb.fresnostate1@gmail.com

How to Have Your Cake and Eat it Too; Recharging with Reverse Tile Drains

Reverse Tile Drains are a method for recharging groundwater that allows land to stay productive. This recharge method is similar to a tile drainage system but operated in reverse. Surface water, stormwater, or reclaimed water is filtered then flows into standpipes connected to near-horizontal subsurface mainlines and perforated pipes, installed at depths of 5 to 15 feet. Water discharges from the pipes into the soil below the root zone of the overlying field and moves down into the aquifer without impacting farming operations or surface activities, enabling conjunctive use of the land. As of October 2024, approximately 30 subsurface recharge systems have been installed. The Reverse Tile Drain system is also known as Tile Recharge, Subsurface Recharge, Tile MAR, and Shallow Subsurface Artificial Groundwater Recharge (SSAGR).

CORDIE R QUALLE PE MCE

Mr. Qualle is currently a part-time lecturer in the Civil and Geomatics Engineering Department of the Lyles College of Engineering at Fresno State. He grew up and has lived most of his life in the San Joaquin Valley. He graduated from Fresno State in 1974 and practiced Civil Engineering in both the public and private sectors for 42 years. He graduated from Norwich University with his Master's in Civil Engineering degree in 2007. He has taught both part-time and full-time in the Civil and Geomatics Engineering Department since 2008. More recently he served as the California Water Institute’s Interim Director from 2020 to 2021. He began groundwater research; specifically the use of subsurface groundwater recharge technology in 2017. That research effort resulted in the award of an Agricultural Research Institute Grant (ARI) in 2020. The grant-funded research started with the installation of a subsurface groundwater recharge system at Fresno State in 2020 followed by three years of research on the technology that included two Master in Civil Engineering graduate students who used the research as their Master’s projects and four undergraduate students who assisted with the work. The research included numerous private and public research partners in the three years.

GROUNDWATER RECHARGE ABSTRACT

For some farms, communities, and individuals, groundwater is the sole source of clean, affordable water. Groundwater supplies 41 percent of California’s average annual water use, or approximately 17.6 million acre-feet of water (Department of Water Resources, Natural Resources Agency 2021). During droughts, groundwater increases to 58 percent of the State’s water use (Department of Water Resources, Natural Resources Agency 2021).

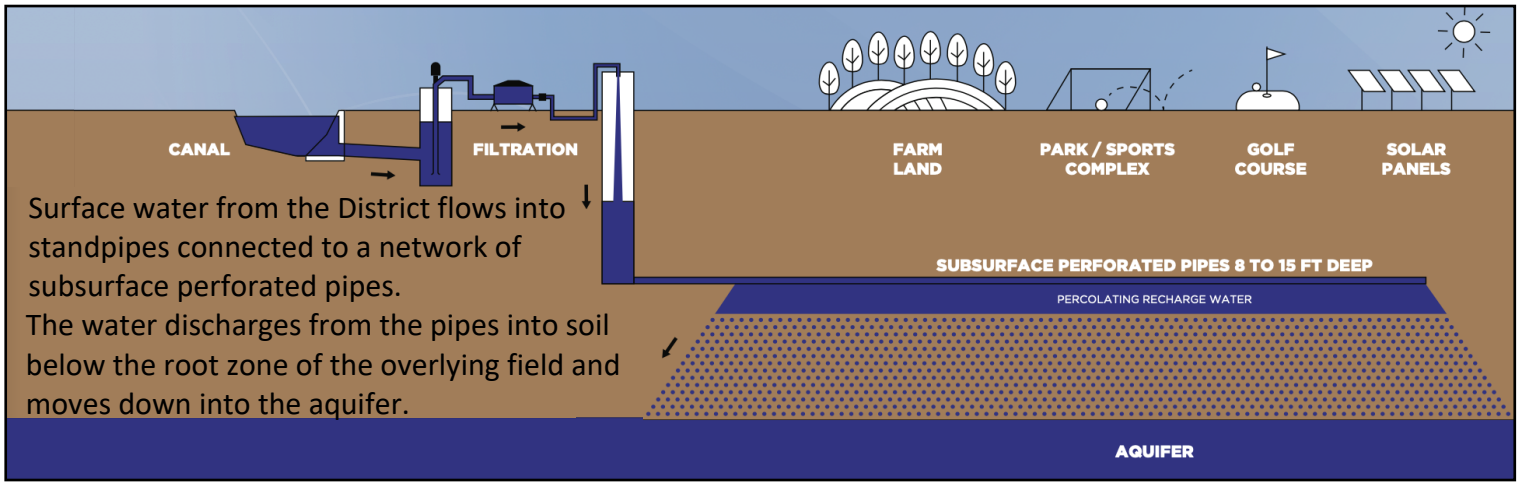
Groundwater quality and quantity has diminished in many parts of California due to over reliance on groundwater. This has been particularly true during the recent droughts of 2012-2016 and 2019-2022. The diminished quantity of groundwater has resulted in the decline of water tables, which has resulted in domestic, municipal, and agricultural wells going dry. As a result of the declining groundwater tables throughout the State, the Legislature enacted the Sustainable Groundwater Management Act in 2014 (Department of Water Resources 2023). The purpose of the Act is to arrest groundwater table decline to avoid adverse impacts.

There are tools and technologies available to accomplish SGMA's goal. They include reducing groundwater use through fallowing agricultural land, reducing domestic and municipal uses, and the use of groundwater recharge technologies. Groundwater recharge technologies include recharge basins, Flood Managed Aquifer Recharge (FloodMAR), and Shallow Subsurface Artificial Groundwater Recharge (SSAGR). This presentation focuses on the results from the testing of SSAGR. The research results indicate that SSAGR is both an efficient and cost-effective technology to deliver recharge water to the aquifer.

Subsurface Groundwater Recharge
Known as Reverse Tile Drains and Tile Recharge

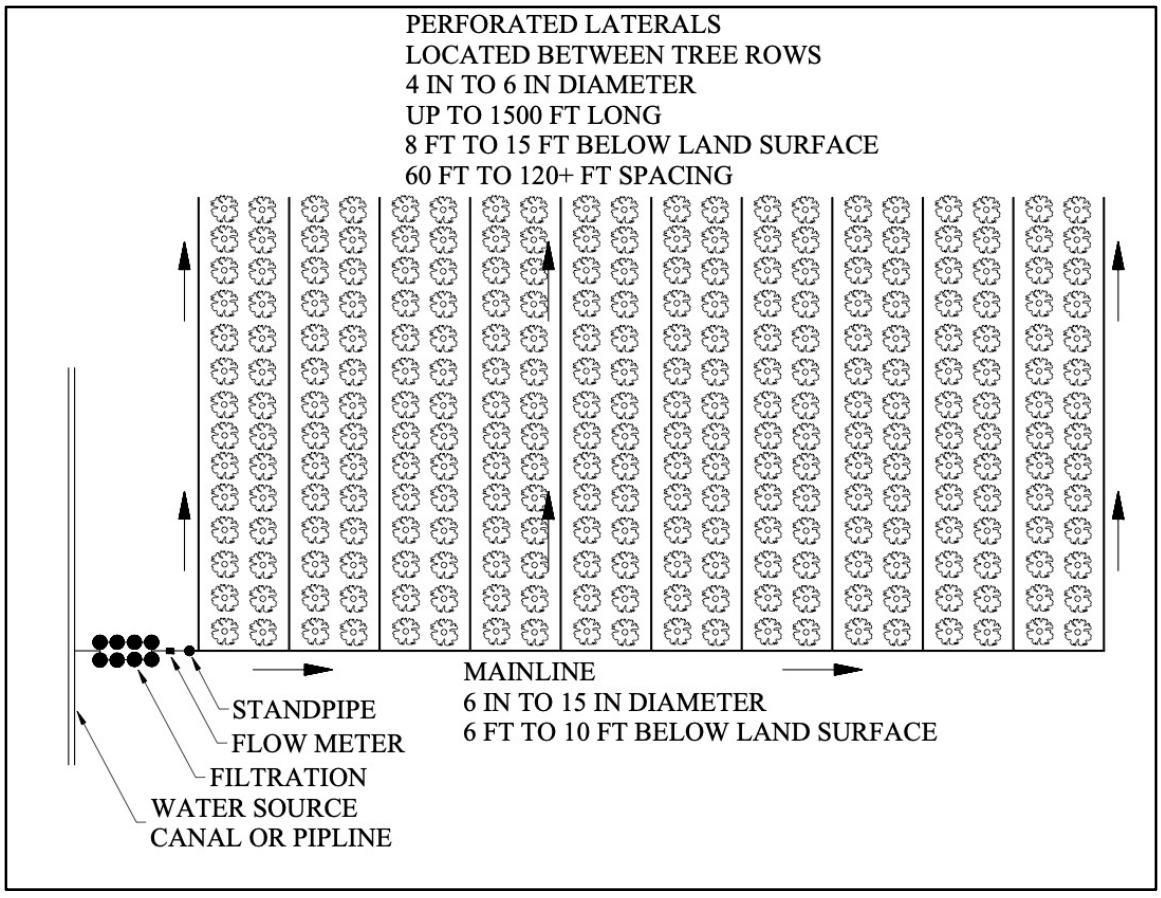
LIDCO INC.
FARM DRAINAGE & RECHARGE SYSTEMS

What is Tile Recharge? A network of subsurface perforated pipes used for groundwater recharge.



Section View of Typical Tile Recharge System

Design: LIDCO uses over 60 years of experience to design custom systems for every project. We take into consideration water table depth, soil infiltration rates, available turnout flow rates, topography, and other field constraints to optimize recharge performance. We coordinate with the landowner, so the subsurface pipes are located between tree rows, solar panels, or other subsurface utilities.



Plan View of Typical Tile Recharge System

www.LIDCOinc.com

Info@LIDCOinc.com 615 N 8th Street, Brawley, CA 92227 760-344-8437

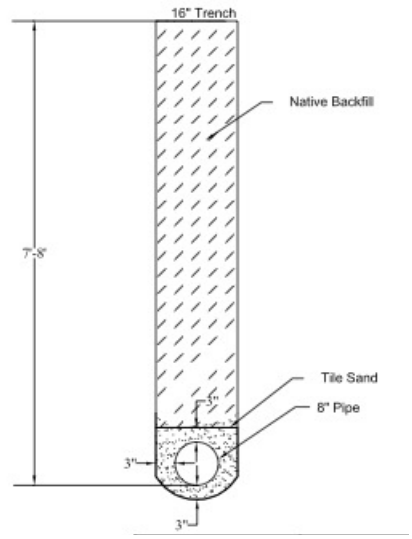
Subsurface Groundwater Recharge

Known as Reverse Tile Drains and Tile Recharge

LIDCO INC
FARM DRAINAGE & RECHARGE SYSTEMS

Installation: Tile Recharge Systems are installed in fields before the farmer plants or develops the overlying land. In a single pass, our specialized machinery cuts a trench, inserts corrugated perforated pipe at the desired depth, and surrounds the pipe with gravel. The trench is backfilled with native material and the top couple feet can be compacted.

Photo of Installation



Typical Trench Section Detail

System Operation: Tile Recharge Systems are designed for gravity flow with the highest water level located in the standpipe. During recharge events, the water level in the standpipes and in onsite monitoring wells, can be checked to assess the movement of the recharged water. Typical system operation is to have the water level in the standpipe approximately 1 to 2 feet above the standpipe outlet, so the highest water level in the system is 6 to 8 feet below the surface.

Standpipes

Trencher getting ready to install perforated pipe.

Why Tile Recharge: Once installed, Tile Recharge helps achieve groundwater sustainability by filling aquifers without impacting surface activities or taking land out of production. Water can be recharged year-round, with no evaporation losses, and costs less than recharge basins or Aquifer Storage and Recovery (ASR) Wells.

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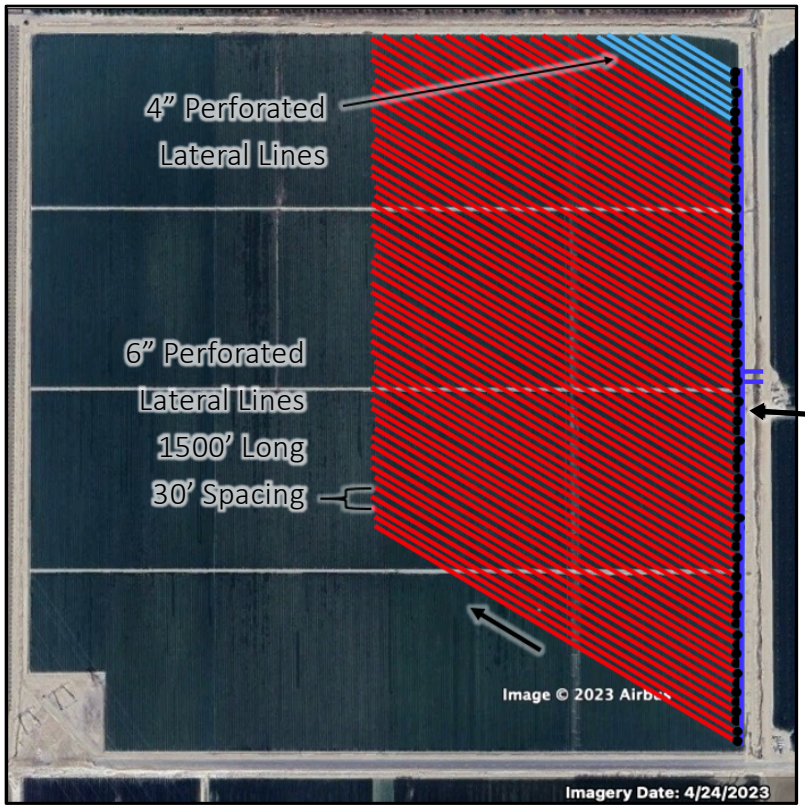
Subsurface Groundwater Recharge
Known as Reverse Tile Drains and Tile Recharge

LIDCO INC.
FARM DRAINAGE & RECHARGE SYSTEMS

Advantages to Recharging with Reverse Tile Drains:

- Keep quality land in production.
- No impact to surface activities, like farming practices.
- No leaching nutrients and pesticides from the surface.
- Recharge year round, if water is available.
- No evaporation losses.
- Can install on a sloped field.
- Installation costs less than other recharge systems.
- Affective way for individual farmers to earn water credits.



Case Study: D Farm

Installed 2022

Recharged ~7500 AF in ~12 months

NO IMPACT TO FARMING

160-acre Field
62-acre Tile Recharge System
Row Crops

68 Mini-Standpipes
68 Perforated Lateral Line
Depth 8 ft to 13 ft

Flowrate
~16 cfs
~7,000 gpm
~31 AF/day

Standpipe Installation

Standpipes in Sloped Field

Water Flowing into Standpipe

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