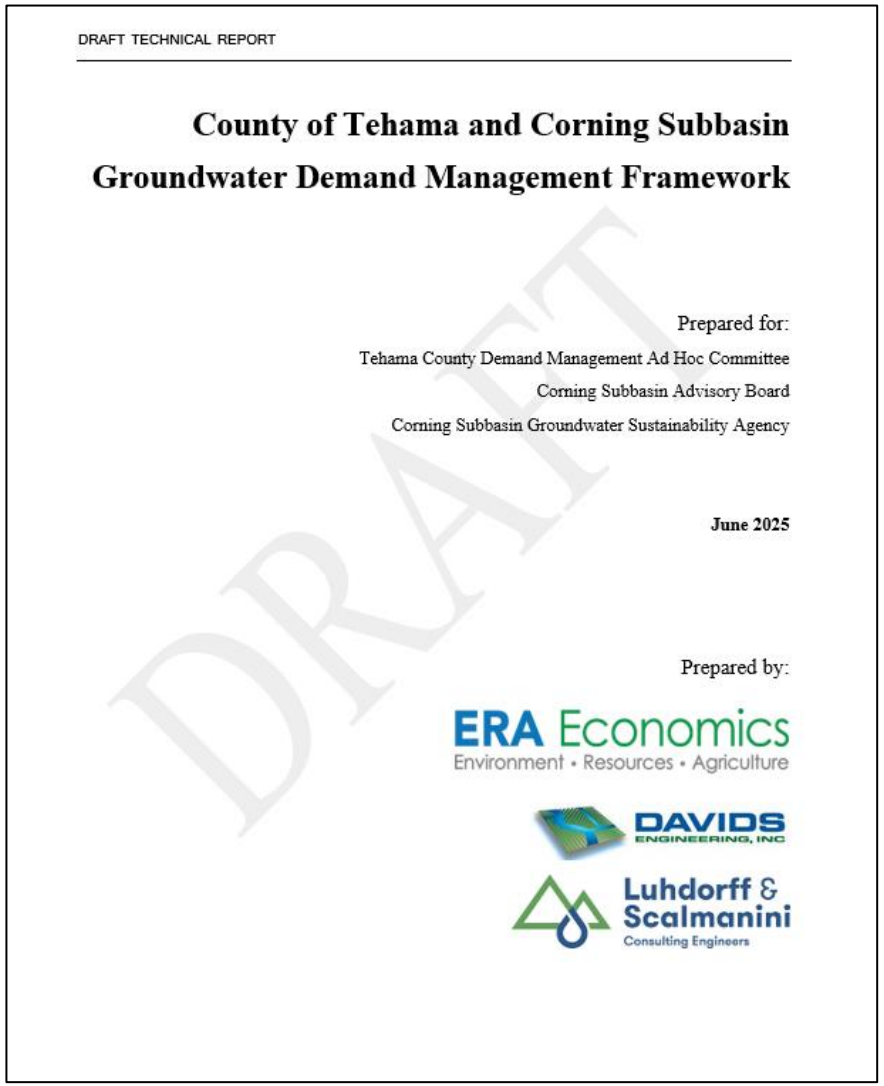
Meeting Agenda Item 5b (item #1):

Demand Management Program

Luhdorff & Scalmanini
Consulting Engineers

Demand Management Framework Technical Report

- ✓ Table of Contents Preview - Next slide
- ✓ First Draft – Done & shared in June with the Tehama DM Working Group
- ✓ Refined Edits – Internal tweaks complete
- ✓ Next Move – Awaiting DM Group feedback for final release.



DRAFT TECHNICAL REPORT

County of Tehama and Corning Subbasin Groundwater Demand Management Framework

Prepared for:

Tehama County Demand Management Ad Hoc Committee

Corning Subbasin Advisory Board

Corning Subbasin Groundwater Sustainability Agency

June 2025

Prepared by:

ERA Economics
Environment • Resources • Agriculture

DAVIDS ENGINEERING, INC

Luhdorff & Scalmanini
Consulting Engineers

LSCE DAVIDS ENGINEERING, INC

Table of Contents

LSCE DAVIDS ENGINEERING, INC

Demand Management Program – Next Steps

- Cost Estimate: $250K - $350K
- Define Pathways: Map the smartest, most cost-effective demand management options for each subbasin
- Crunch the Numbers: Model pumping reductions, costs and economics; build the tracking system
- Engage & Decide: Identify key decisions with stakeholders
- Admin Framework: Set up program management structure
- Timeline: Lay out clear implementation schedule
- Launch: Finalize and roll out the workplan

LSCE DAVIDS ENGINEERING, INC

Meeting Agenda Item 5c

Model and Options for Periodic Evaluation

Luhdorff & Scalmanini
Consulting Engineers

Meeting Agenda Item 5c:

SGM Implementation Grant

Luhdorff & Scalmanini
Consulting Engineers

Model Update: Why Revisit the Model Platform?

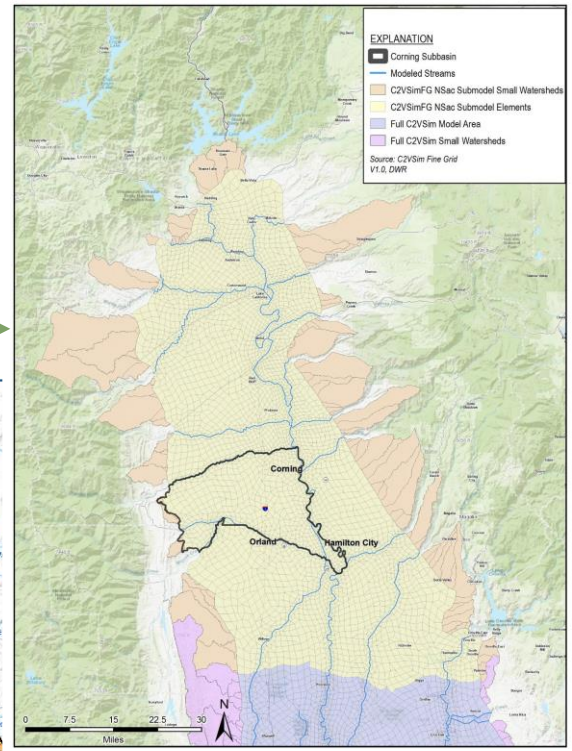
SGMA task ahead:

- 5-year Periodic Evaluation

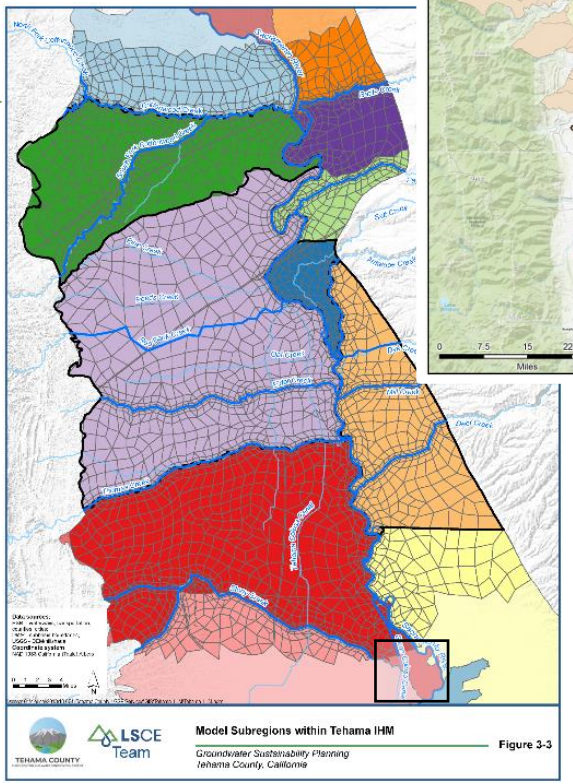
Two candidate model platforms available for Corning GSAs:

- *Corning-specific Model* (**C2VSimFG platform**)
  - Developed by M&A
- *Tehama IHM* (**SVSim platform**)
  - Developed by LSCE
  - *Tehama IHM* already covers ~90% of Corning Subbasin

Corning-specific model domain



Tehama IHM model domain



Consideration:

1. Update current *Corning-specific Model* (**C2VSimFG platform**)

or

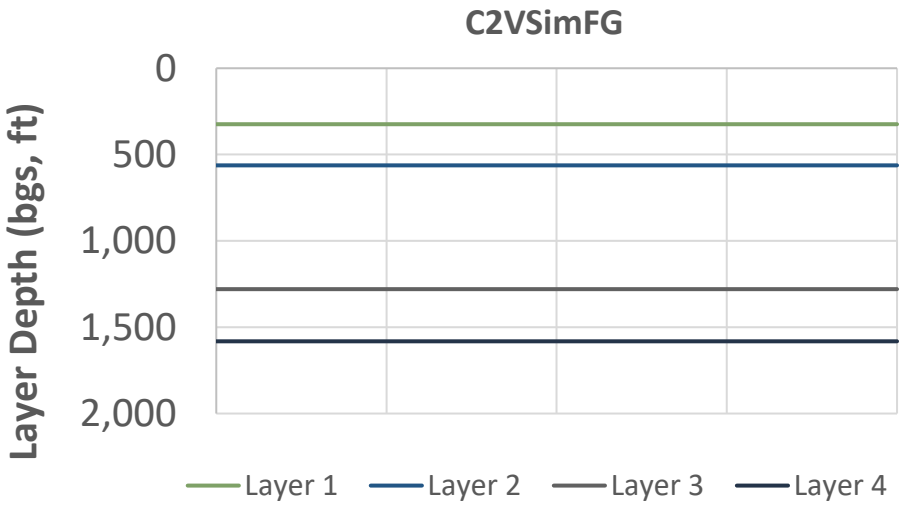
2. Update and expand *Tehama IHM* (**SVSim platform**)

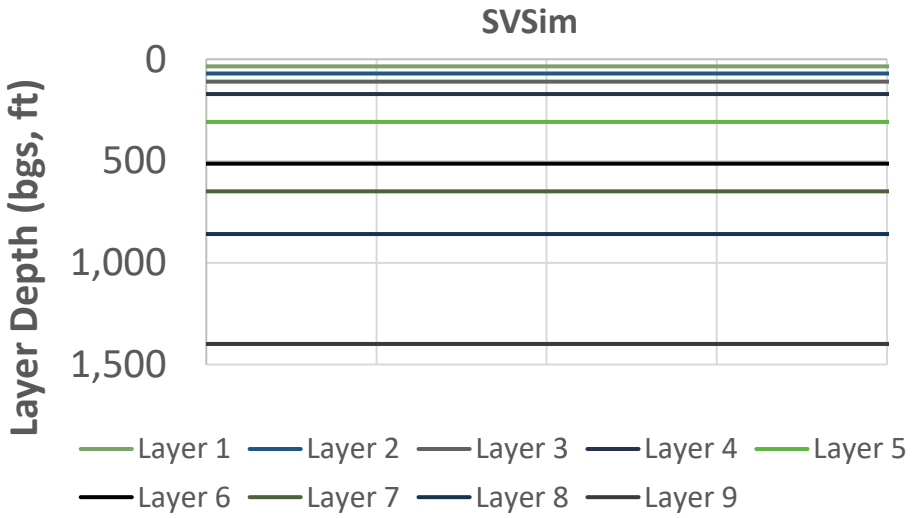
LSCE DAVIDS ENGINEERING, INC

Model Platforms: Regional vs Localized Focus

- *Corning-specific Model* (**C2VSimFG platform**)
  - Broad Central Valley focus; less attention to local hydrogeologic detail;
  - Four-layer aquifer system;
  - Relies on generalized regional parameters, limited local refinements;
  - Updates and calibration dependent on DWR schedule and priorities

- *Tehama IHM* (**SVSim platform**)
  - Developed specifically for Sacramento Valley conditions;
  - Enhanced stratigraphy through a nine-layer aquifer system;
  - Explicitly designed for incremental and localized updates
  - Enables regional GSAs to efficiently integrate new geologic, hydrologic, or land-use data without extensive reliance on DWR





LSCE DAVIDS ENGINEERING, INC

Advantages of Transitioning to SVSim from C2VSim

Comparison of Corning C2VSimFG and Tehama IHM Models										
1 - Advantage 0 - Parity -1 - Disadvantage		Previous Modeling Investment	Representation of Corning Subbasin within Model Domain	Model Layering / Stratigraphy	Calibration Period	Calibration and Parameterization	Ease of Model Updates	Independence from DWR	Inter-basin Water Budget Accounting	Intra-Basin Coordination
	Tehama IHM	0	-1	1	1	1	1	1	1	1
	Corning C2vSimFG	0	1	-1	-1	-1	-1	-1	-1	-1

- Greater vertical resolution (nine layers vs four), improving stream depletion and groundwater-surface water interaction analyses
- More refined and local-scale inputs such as land use, pumping distribution, and aquifer parameters
- Higher element resolution provides better local accuracy for sustainability planning

LSCE DAVIDS ENGINEERING, INC

Recommendation for Transition

- Adopt Tehama IHM (SVSim) as Corning's primary platform

- Immediate benefits to stakeholders:
  - Consistency in technical assumptions across GSA boundaries
  - Streamlined inter-agency collaboration
  - More efficient use of resources, avoiding duplicative efforts and model divergence

Meeting Agenda Item 5c

Options for Periodic Evaluation

Luhdorff & Scalmanini
Consulting Engineers

Options for Periodic Evaluation: Response to DWR's Corrective Actions

Luhdorff & Scalmanini
Consulting Engineers

Next Steps

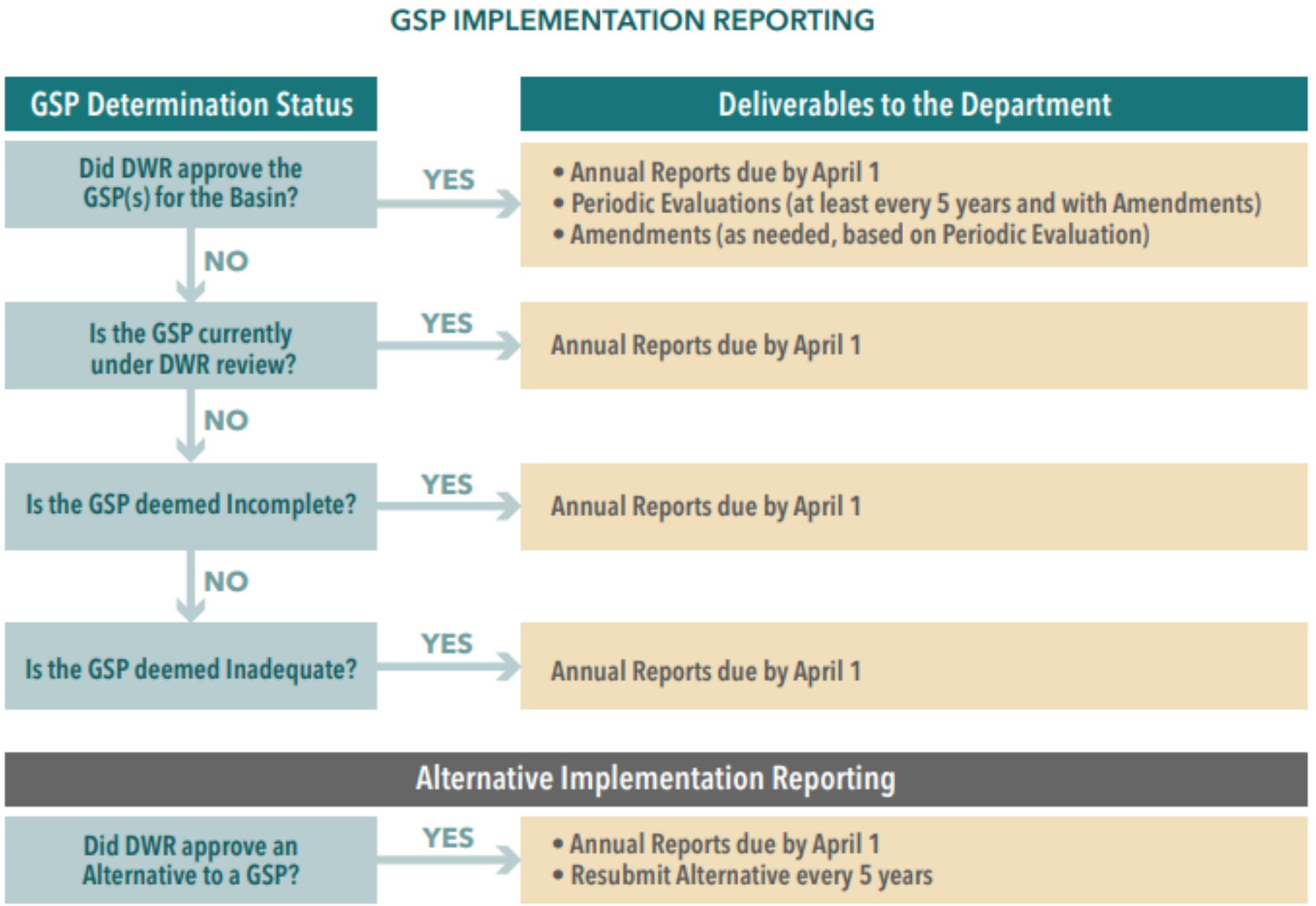


Figure 1: Summary of Implementation Deliverables for each Basin Determination Type

LSCE DAVIDS ENGINEERING, INC

Periodic Evaluation Verus GSP Amendment

Periodic Update (Water Code §10728, 23 CCR §355.6)

1. Required **at least every 5 years** after initial GSP adoption.
2. Used when the plan remains fundamentally sound, but updated data, improved understanding, or progress reporting is needed.
3. Includes updated water budget, monitoring results, projects & management actions status, and any refined sustainable management criteria.

GSP Amendment (Water Code §10728.2, 23 CCR §355.10)

1. Required **when significant changes occur** that materially affect the plan's ability to achieve sustainability (e.g., revised sustainable management criteria, major hydrologic changes, new undesirable results).
2. Triggered when **new information** (e.g., refined model results, new groundwater-surface water interaction data) shows that the existing GSP will not meet the sustainability goal.
3. Required if **DWR evaluation** finds deficiencies that cannot be addressed by a periodic update alone (e.g., corrective actions or plan revisions mandated).

LSCE DAVIDS ENGINEERING, INC

Periodic Evaluation (Due January 2027)

1. New Information Collected
2. Recommended Correction Actions
3. Groundwater Conditions
    1. Groundwater Levels
    2. Interconnected Surface Water
    3. Groundwater Quality
    4. Groundwater in Storage
    5. Land Subsidence
4. Status of Projects and Management Actions
5. Changes in Basin Setting Based on New Information or Changes in Water Use
6. Monitoring Networks
7. GSA Authorities and Enforcement Actions
8. GSA Administration, Stakeholder Engagement and Inter-Agency Coordination
9. Summary of Proposed or Completed Revision to the Plan Elements

Corrective Action 1

SUMMARY

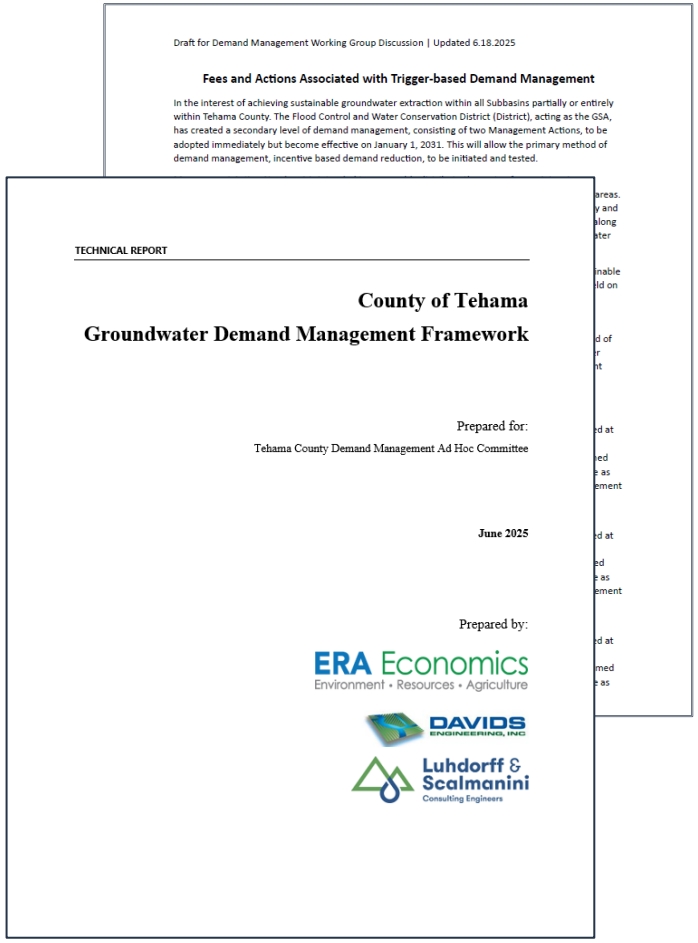
Provide:

a) Update of overdraft estimates, groundwater conditions, and project benefits

b) Progress on the Demand Management Program

RESPONSE

- Assessment of overdraft, current conditions, and projects
- Demand Management Framework, Workplan, and Implementation status update


Draft for Demand Management Working Group Discussion | Updated 6.18.2025

Fees and Actions Associated with Trigger-based Demand Management

In the interest of achieving sustainable groundwater extraction within all Subbasins partially or entirely within Tehama County. The Flood Control and Water Conservation District (District), acting as the GSA, has created a secondary level of demand management, consisting of two Management Actions, to be adopted immediately but become effective on January 1, 2031. This will allow the primary method of demand management, incentive based demand reduction, to be initiated and tested.

TECHNICAL REPORT

County of Tehama

Groundwater Demand Management Framework

Prepared for:

Tehama County Demand Management Ad Hoc Committee

June 2025

Prepared by:

ERA Economics
Environment • Resources • Agriculture

DAVIDS ENGINEERING, INC

Luhdorff & Scalmanini
Consulting Engineers

LSCE

Corrective Action 2: Groundwater Level SMCs

SUMMARY

Provide:

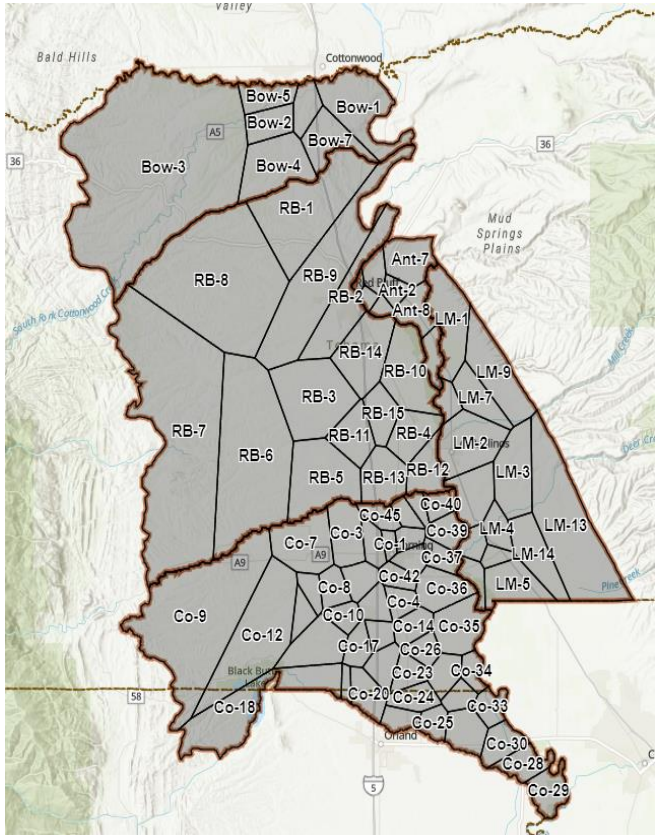
a. Thiessen polygon selection criteria & explanation

b. Criteria & process used to delineate focus areas

c. Plan to track & report dry wells

RESPONSE

- Provide Explanations (a & b)
  - Additional analysis
- Community Domestic Monitoring Program
  - Dry well distribution analysis



LSCE

Corrective Action 3: Groundwater Quality SMC

SUMMARY

a) Establish SMC for all constituents of concern

b) Revise SMC

c) Process to determine if management is causing degraded water quality or migration

RESPONSE

- General mineral testing
- Addition of new monitoring wells

Reassess SMC accordingly after completion of additional sampling

LSCE

Corrective Action 4: Land Subsidence

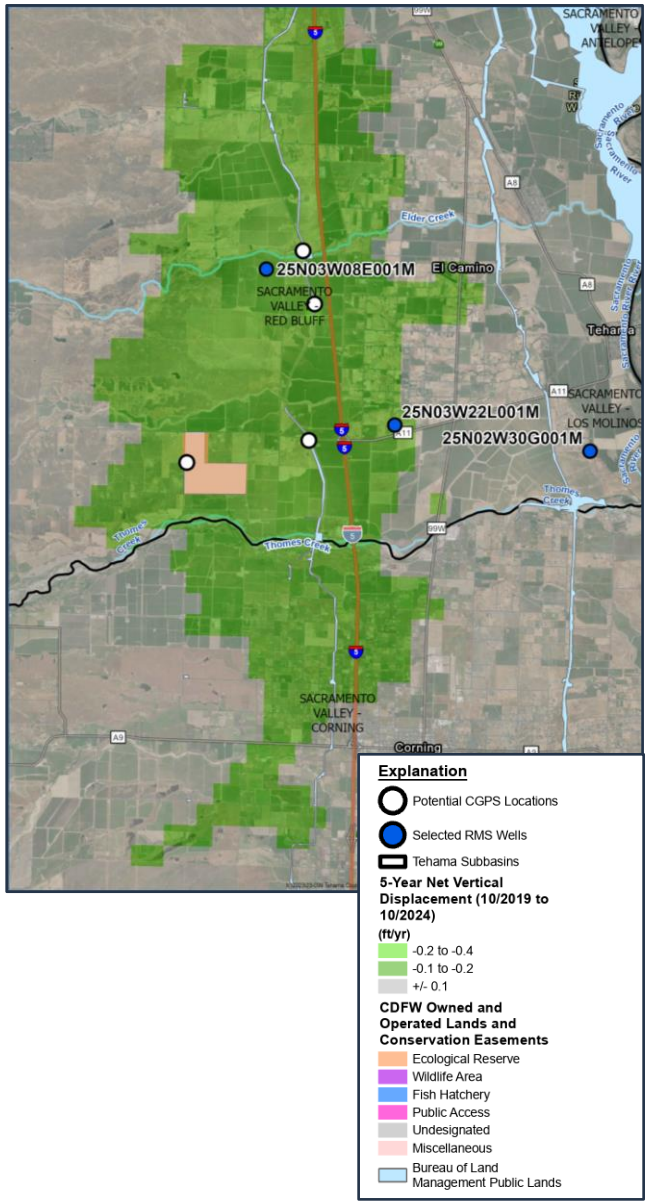
SUMMARY

a) Consider impacts to uses & users to set annual rate, total subsidence, and MTs that will lead to URs

RESPONSE

Collect Subsidence data:

1. DWR Subsidence BMPs
2. Install CGPS Stations
3. Critical Infrastructure Survey as needed
    - Assess MTs based on new data



LSCE

Corrective Action 5: Interconnected Surface Water

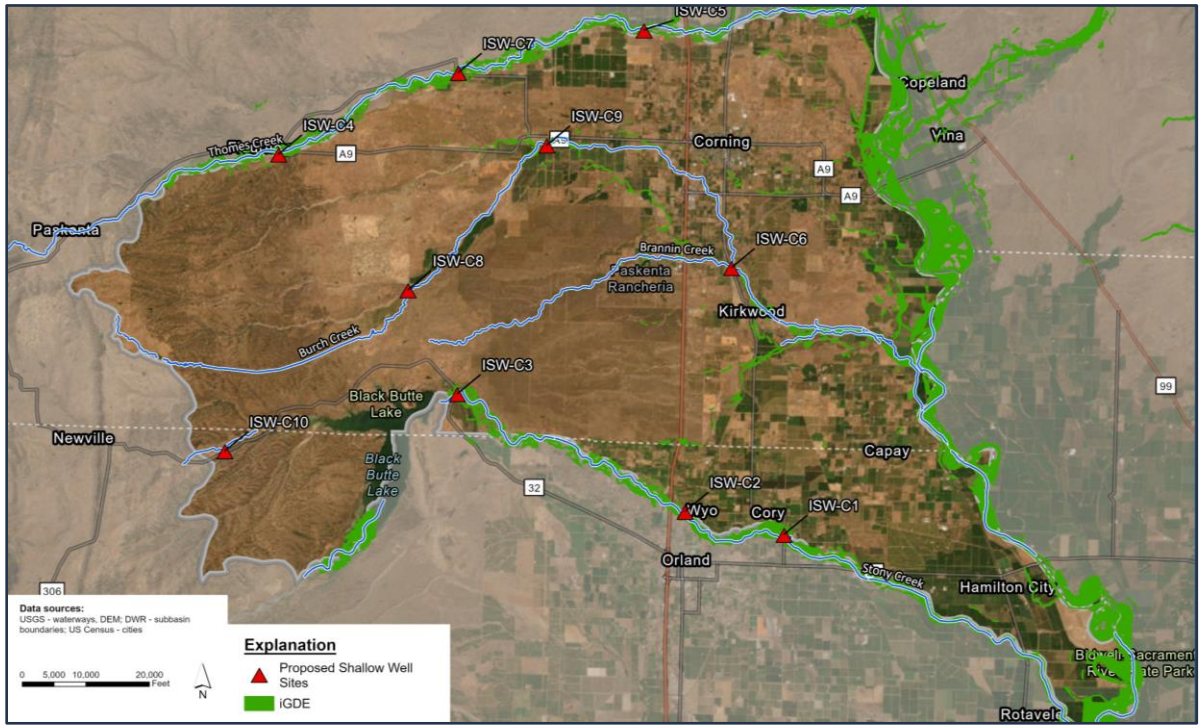
SUMMARY

a) Estimate the quantity and timing of depletions
b) Remove exemption for URs in unanticipated future conditions from SMC
c, d, e) Use guidance issued by DWR when available.
Collaborate, fill data gaps, and continue managing depletions

RESPONSE

a)
- Task 3.2 & 3.3
- Established Monitoring Network

b)
- SMCs revised after sufficient data collected



LSCE

Corrective Action 6: Thomes Creek

SUMMARY

Provide:

a. Plan to fill data gaps in the groundwater monitoring network near Thomes Creek

RESPONSE

Actively working to fill gaps through:

- Task 4.2 – Recharge
- Task 3.3 – Stream Gaging

LSCE

Periodic Evaluation Verus GSP Amendment

Periodic Update (Water Code §10728, 23 CCR §355.6)

1. Required **at least every 5 years** after initial GSP adoption.
2. Used when the plan remains fundamentally sound, but updated data, improved understanding, or progress reporting is needed.
3. Includes updated water budget, monitoring results, projects & management actions status, and any refined sustainable management criteria.

GSP Amendment (Water Code §10728.2, 23 CCR §355.10)

1. Required **when significant changes occur** that materially affect the plan's ability to achieve sustainability (e.g., revised sustainable management criteria, major hydrologic changes, new undesirable results).
2. Triggered when **new information** (e.g., refined model results, new groundwater-surface water interaction data) shows that the existing GSP will not meet the sustainability goal.
3. Required if **DWR evaluation** finds deficiencies that cannot be addressed by a periodic update alone (e.g., corrective actions or plan revisions mandated).

Meeting Agenda Item 5d:

In-Lieu Recharge Matrix and Next Steps to Get Project Online

Luhdorff & Scalmanini
Consulting Engineers

Matrix Progress Summary

- Received Board Approved Matrix

- **Updating Project Quotes to Reflect Current Prices**
- **Fill Out Matrix and Rank Projects**
- **Draft Landowner Agreement and Present to Landowners**

- Final Ranking of Projects
- Present Findings to GSAs

- Implementation

LSCE DAVIDS ENGINEERING, INC

Board Approved Matrix

Category	Variable	Points	Criteria
Project Logistics	Agreement	Yes/No	Landowner Agreement is a requirement for consideration
	Landowner	0-1	First project by landowner gets 1 point, subsequent projects receive no points
	Permitting Requirements	0-1	No additional requirements gets 1 point
Project Benefit	$/AF (1 Year of Implementation)	0-2.5	Five tiers, from <$200/AF to >$800/AF, projects with lower cost per acre-foot recieves higher score
	Groundwater Storage Polygon	0-3.5	Projects in Polygons with larger annual groundwater reduction receive higher score

$/AF (1 Year of Implementation) Tiers	
Points	**Cost per Acre Foot**
0	>$800
0.625	$600 - $800
1.25	$400 - $600
1.875	$200 - $400
2.5	< $200

Groundwater Storage Tiers	
Points	**Avg Reduction in GW Storage (AF/acre/yr)**
0	< 0
1.75	0 - 0.03
3.5	> 0.03

LSCE DAVIDS ENGINEERING, INC

Updating Quotes and Information for Projects

Project Information and Lostistics													Project Benefit				
Project Name	Landowner ID	Landowner Agreement	Latitude	Longitude	Direct, In-Lieu, or Both	Subbasin	County	Water District	Water Source	Description of Improvements	Permitting Requirements	Description of Monitoring	Groundwater Offset (AF)	Area (Acres)	Cost Estimate	$/AF (1 year of implementation)	Groundwater Storage Polygon
GT-1 LLC			39.83407	-122.17389	In-Lieu	Corning	Tehama	Kirkwood WD	T-C canal	Needs pump, filter, USBR approval	Yes	Meter on T-C turnout	262.0	130 acres	$263,384.00	$1,005	Co-22
J C 1			39.953627	-122.184061	In-Lieu	Corning	Tehama	Corning WD	Corning WD		No	Meter on CWD outlet	61.0	35 acres	$4,252.00	$70	Co-45
J C 2			39.944264	-122.188306	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Needs CWD meter, pipe, filters	No	Meter on CWD outlet	60.0	20 acres	$12,520.80	$209	Co-1
R C 1			39.899045	-122.191566	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Sand media filter, PVC pipe + labor	No	Meter on CWD outlet	39.0	15 acres	$11,006.00	$282	Co-42
Cr - Phase 1			39.96162	-122.25359	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Needs booster pump and filters	No	Meter on CWD outlet	368.0	175 acres	$74,778.85	$203	Co-3
Cr - Phase 2			39.96162	-122.25359	In-Lieu	Corning	Tehama	Corning WD	Corning WD	More pump/filter capacity to serve more acreage	No	Meter on CWD outlet	368.0	175 acres	$62,101.00	$169	Co-3
MAG			39.855965	-122.173566	In-Lieu	Corning	Tehama	Kirkwood WD	T-C canal	Needs new pump, filters	No	Meter on T-C turnout	320.0	150 acres	$142,014.00	$444	Co-14
H F-K			39.858448	-122.172934	In-Lieu	Corning	Tehama	Kirkwood WD	T-C canal	Needs pump, filter, USBR pump license (as of 3/24/25 it is under review and pending approval)	No	Meter on T-C turnout	250.0	124 acres	$198,023.00	$792	Co-14
H F-C			39.90335	-122.27932	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Needs filters, loss of power unit prime batteries	No	Meter on CWD outlet	202.0	100 acres	$150,222.00	$744	Co-11
MC			39.79318	-122.23465	In-Lieu	Corning	Glenn	Orland Unit Water Users' Assn.	OUWUA	Filters, VFD, trash rack, etc.	No	Meter on OUWUA outlet	169.0	65 acres	$164,362.00	$973	Co-20
Hd			39.88616	-122.210865	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Meter from Corning WD	No	Meter on CWD outlet	8.0	3 acres	$4,995.00	$624	Co-5
Kg			39.90365	-122.18474	In-Lieu	Corning	Tehama	Corning WD	Corning WD	705 feet of 6-inch pipe with valves every 20 feet to flood irrigate	No	Meter on CWD outlet	16.0	7 acres	$22,967.00	$1,435	Co-42
R 1			39.88769	-122.21274	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Sand media, labor and VFD, booster + CWD meter	No	Meter on CWD outlet	51.0	20 acres	$44,215.00	$867	Co-5
R 2			39.89714	-122.21384	In-Lieu	Corning	Tehama	Corning WD	Corning WD	Sand media filter, PVC pipe, labor and VFD and booster pump + CWD meter	No	Meter on CWD outlet	77.0	38 acres	$48,584.00	$631	Co-6
PP			39.759406	-122.129528	In-Lieu	Corning	Glenn	Orland Unit Water Users' Assn.	OUWUA	Need 50 HP pump and PVC pipe	No	Meter on OUWUA outlet	115.0	35 acres	$24,744.00	$215	Co-25
Rs					In-Lieu	Corning	Tehama	Corning WD	Corning WD		No	Meter on CWD outlet	114.0	49 acres			
Bm			39.95286	-122.21141	In-Lieu	Corning	Tehama	Corning WD	Corning WD		No	Meter on CWD outlet	155.0	77 acres	$6,210.71	$40	Co-2

LSCE DAVIDS ENGINEERING, INC

Preliminary Ranking of Projects

Project Name	Multiple Project	Multiple Project Score	Permitting Requirement	Permitting Score	$/AF	$/AF Score	Groundwater Storage Polygon	Storage Polygon Score	Total Score
GT-1 LLC	No	1	Yes	0			Co-22	1.75	2.75
J C 1	No	1	No	1			Co-45	3.5	5.5
J C 2	Yes	0	No	1			Co-1	1.75	2.75
R C 1	No	1	No	1			Co-42	1.75	3.75
Cr - Phase 1	No	1	No	1			Co-3	1.75	3.75
Cr - Phase 2	Yes	0	No	1			Co-3	1.75	2.75
MAG	No	1	No	1			Co-14	3.5	5.5
H F-K	No	1	No	1			Co-14	3.5	5.5
H F-C	Yes	0	No	1			Co-11	3.5	4.5
MC	No	1	No	1			Co-20	3.5	5.5
Hd	No	1	No	1			Co-5	3.5	5.5
Kg	No	1	No	1			Co-42	3.5	5.5
R 1	No	1	No	1			Co-5	1.75	3.75
R 2	Yes	0	No	1			Co-6	#N/A	#N/A
PP	No	1	No	1			Co-25	1.75	3.75
Rs	No	1	No	1					2
Bm	No	1	No	1			Co-2	#N/A	#N/A

LSCE DAVIDS ENGINEERING, INC

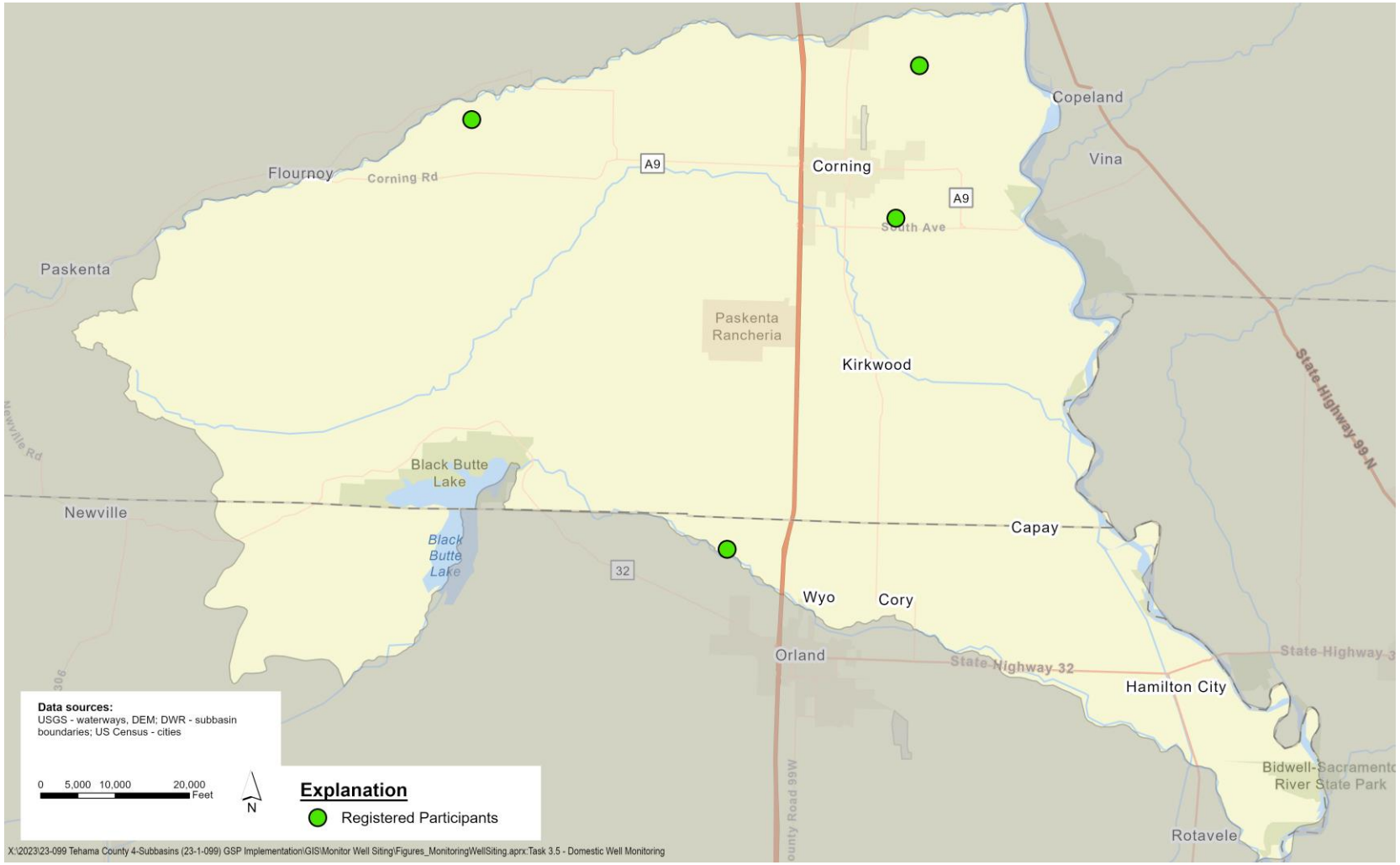
Meeting Agenda Item 5d:

Domestic Well Monitoring Status

Luhdorff & Scalmanini
Consulting Engineers

Community Domestic Monitoring Program Status

- ✓ 4 volunteers in the Corning Subbasin (1 in Glenn County)
- ✓ Draft access agreement in review
- ✓ Purchase orders received for equipment



Community Domestic Monitoring Program: Next Steps

1. Approve access agreement and execute with volunteers (first half of August)
2. Schedule and install equipment on volunteer wells (second half of August)
3. Create video content during installation (end of August)
    - Short videos for outreach and document installation procedures
4. Register more participants (through September)
5. Begin data visualization integration (beginning of September)
6. Purchase remainder of monitoring equipment (end of September)

LSCE DAVIDS ENGINEERING, INC

Meeting Agenda Item 5d:

Schedule

Luhdorff & Scalmanini
Consulting Engineers

DWR Grant Implementation Schedule Status

- ✓ All Feasibility Studies completed in Corning Subbasin.
- ✓ Corning South Pond project (Task 2) infeasible due to poor recharge potential.
- ✓ Feasible projects are in the design phase.

Tehama GSA GSP Implementation Project CSAB Meeting – 8.06.2025

Feasibility Studies Status – Corning Subbasin (7/30/2025)

DWR Grant Cost Category	Corning Subbasin % Complete
Feasibility Studies	
- Task 1 – Brannin Creek Dry Well Recharge	100%
- Task 2 – South of Corning Recharge Pond (Infeasible)	100%
- Task 3 – Multi-benefit Recharge Project (Simpson Road)	100%
- Task 4 – California Olive Ranch Recharge	100%
- Task 5 – Thomes Creek Diversions For Recharge	100%
- Task 6 – Stony Creek Diversions For Recharge	100%

Schedule: Submit to DWR with Invoicing/Progress Report 6.

LSCE DAVIDS ENGINEERING, INC

DWR Grant Implementation Schedule Status

- ✓ All Multi-completion wells completed in Corning Subbasin.
- ✓ Stream gages to be completed by 11/28/2025.
- ✓ Shallow Monitoring Wells to be completed by 11/28/2025.

Tehama GSA GSP Implementation Project CSAB Meeting – 8.06.2025

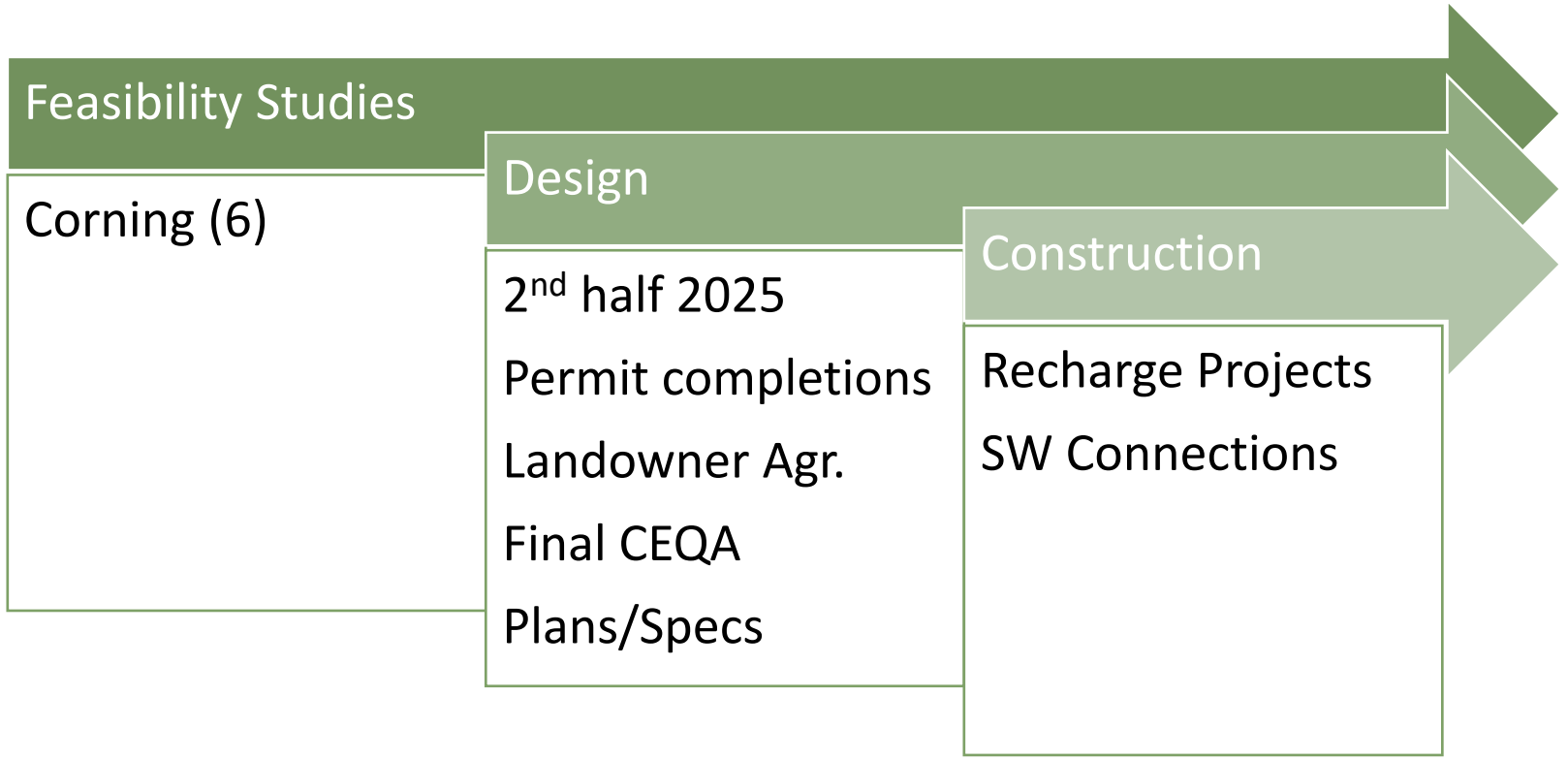
Monitoring Network Completion Status (7/30/2025) – M-C Wells

DWR Grant Cost Category	Corning Subbasin
Monitoring Network Enhancements	Multi-Completion Wells
- Feasibility Study - Sites	100%
- 100% Design Plans & Specs.	100%
- Permits	100%
- Site Summary Report	100%
- Construction Photos	100%
- Notice of Completion	100%
- As-built Drawings	100%
- Well Completion Reports	100%
- Community Monitoring Plan	100%
- Monitoring Equipment Technical Memorandum	100%

LSCE DAVIDS ENGINEERING, INC

DWR Grant Implementation Schedule Status

- ✓ Design in-process and permits under review.
- ✓ MOUs and Agreements in-process.
- ✓ SW connections to begin in Fall 2025.



LSCE DAVIDS ENGINEERING, INC

DWR Grant Implementation Schedule Status

- ✓ Discussing DWR Funding Agreement Schedule Extension for Corning Subbasin (currently 3/31/2026).
- ✓ Schedule extension requested to 12/31/2026 for GSP update and modeling tasks.
- ✓ Schedule extension requested to 12/31/2026 for recharge project construction tasks.

Meeting Agenda Item 5d:

Other Items of Interest

Luhdorff & Scalmanini
Consulting Engineers

Well Video Task Update

Purchased a down-well video camera for both GSAs

Features and Accessories Included:

- **Camera Probe** – 22mm (7/8") diameter, 316 marine grade, fully pressure rated
- **Lens** – robust, scratch resistant clear sapphire
- **160°** - wide viewing angle
- **LED Lights** – 7 ultra-bright adjustable
- **Monitor** – resolution 600x1024, (7"), full colour, IP65
- **Adjustable Positioning Arm** – a solution for adjusting the monitor for viewing in various angles and lighting conditions
- **Batteries (x2)** – removable, rechargeable lithium ion, up to 5 hours (3200mAh) per battery
- **Charger** – plug type A, AC Input, compact, portable
- **DVR**– records video and audio feed
- **SD Card** – removable for transferring files to computer
- **Microphone** – 3.5mm jack, for audio voice over
- **Centralizer** – removable, centers and stabilizes camera probe in well
- **Retrieval Hook** – for light weight items
- **Monitor Visor** – for glare free viewing
- **Hanger and Tape Guide** – built-in, to support the unit at the well head and protect the tape from sharp edges
- **Tape** – polyethylene, 4 conductors

Heron dipper-See Borehole Camera