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September 20, 2023

TO: LOCSD Utilities Advisory Committee

FROM: Ron Munds, General Manager

SUBJECT: **Agenda Item 4 – 09/20/2023 Utilities Advisory Committee Meeting**
Transfer of United States Geologic Survey (USGS) Monitoring Wells to the District

STAFF RECOMMENDATION

Staff recommends that the UAC adopt the following motion:

Motion: I recommend to the Board that the Board approve the transfer of the USGS wells (LA 14) to the District.

DISCUSSION

Background

The Basin Management Committee (BMC) is expanding the seawater intrusion monitoring network so it can better understand the extent of the current seawater intrusion front location and determine if the programs and projects being implemented are working to slow or reverse its progression. To this end, the BMC, in 2022, provided funding for the rehabilitation of an existing well located on District property and have allocated funds in 2023 for a new monitoring well project located at the east end of Skyline Drive. The expansion of the groundwater monitoring network is based on a Technical Memorandum (TM) (attached) produced by Cleath-Harris Geologist (CHG) which recommended other new and existing locations for monitoring wells.

One of the recommended locations in the TM is located at the north end of Palisades Drive and is currently owned by the United States Geologic Survey (USGS). The USGS has indicated that they want to divest their interest in the well and are willing to transfer the ownership to a willing party. Since the District has taken the lead role on establishing new and/or rehabilitation of existing wells, the County, who was the original contact for USGS, has requested that the District be the recipient of the transfer of the cluster (three) wells at the Palisades location.

Next Steps

The USGS transfer three agreements are attached to the report. Basically, the District will be agreeing to accept all future responsibilities and liabilities for the wells. The next step is for the Board to approve the transfers by signing the transfer agreements and sending them back to USGS. Though the wells will technically be owned by the District, the BMC will be responsible for any improvements and future maintenance.

Upon the successful transfer of the wells, the BMC will proceed with the modifications needed to LA 14 (well #355-375, 430-480,550-600). This will complete two of the three well modification projects presented in the CHG TM.

Attachments

DRAFT

Cleath-Harris Geologists, Inc.
75 Zaca Lane, Suite 110
San Luis Obispo, CA 93401
(805) 543-1413

Technical Memorandum

Date: July 22, 2022

From: Spencer Harris, HG 633

To: Dan Heimel, PE, Executive Director
Los Osos Basin Management Committee

SUBJECT: Recommendations for Well Modifications and New Monitoring Well Locations for the Los Osos BMC Groundwater Monitoring Program.

This memorandum presents recommendations for modifying three existing monitoring wells and for adding monitoring well locations to the Los Osos Basin Plan (LOBP) monitoring network. The purpose of the modifications and new wells is to fill data gaps with respect to seawater intrusion monitoring in the Basin. These recommendations were developed as part of the adaptive management process.

Background

Seawater intrusion is a significant threat to the community water supply for Los Osos. Lower Aquifer Zone E is the deepest aquifer in the Basin and is the most susceptible to intrusion. The existing LOBP monitoring program includes 93 wells, however, only a few of these wells (such as LA12, LA18, and LA40) are dedicated Lower Aquifer Zone E monitoring wells that provide water quality information for tracking seawater intrusion[1]. Additional monitoring locations in Zone E are needed.

Four existing monitoring network wells (LA13, LA14, LA16, and LA17) were previously identified as wells that could potentially be modified to provide Zone E water quality monitoring locations in the western portion of the Basin[2]. These four wells were inspected in November 2021 and are the subject of this memorandum. In addition, new locations for Lower Aquifer Zone D and Zone E nested monitoring wells are recommended herein.

Existing Well Modifications

The locations of the wells evaluated for modification are shown in Figure 1 (attached). Currently, these wells have relatively large diameter casings (6-inch to 12-inch) which require large purge volumes to obtain representative samples. They are also mixed zone completions (D and E screened together) which preclude screening exclusively for Zone E, and the wells may also be

[1] Aquifer zone and Basin area designations for monitoring network wells may be found in Appendix B of the 2021 Annual Report.
[2] Figure D6 of Appendix D in the 2019 Annual Report.

affected by borehole leakage. The proposed modifications consist of setting casing liners, along with deep seals, that are intended to isolate specific permeable sediment intervals within Zone E while also mitigating borehole leakage and reducing the required purge volumes prior to sampling by an order of magnitude. Table 1 summarizes the individual modifications.

Table 1. Proposed Well Modifications

Well ID	Location	Elevation	Current screen depth	Current depth of fill	Modified screen depth
		(feet)			
LA13	Ferrell Avenue	104	425-620	537	510-530
LA14	Palisades	80	355-375, 430-480,550-600	554*	550-590
LA16	Los Osos Valley Rd.	109	330-355, 395-415, 465-505, 530-575	511	470-500
LA17	Broderson	210	collapsed during construction	331	not feasible

*requires clean-out prior to modification

Well LA13 is owned by the Los Osos CSD, while the remaining wells are owned by San Luis Obispo County. Conceptually, the modifications consist of placing a small diameter (2.5-inch Schedule 80 PVC) casing liner into the existing wells that would be screened opposite permeable sediments in Zone E. A high solids bentonite slurry would be used to seal the new liner, and would extend across shallower screened intervals in the existing casing that could provide some penetration into the original annular space and potentially mitigate any existing borehole leakage. The modified wells would target specific depth intervals in Zone E and would greatly reduce the purge volumes required to collect representative samples (from a few thousand gallons to a few hundred).

Well LA17, which had collapsed during construction in 1985, was determined to be filled in at least 100 feet above the reported collapse depth, and no modification is considered feasible. Details of the recommended modifications for LA13, LA14, and LA16 are included in Appendix A. Geologic cross-sections showing the locations and depths of the modifications with respect to the inferred location of seawater intrusion, are shown in the attached Figures 2 through 6. Estimated Contractor costs for each of the modifications are included in Appendix B.

The recommended priority for well modification work would be to perform modifications at LA16 first, followed by LA14, and lastly LA13 (proceeding from west to east). LA16, which is also a Water Level metric well, is the farthest west and the modification would help characterize the lateral (southerly) extent of Zone E intrusion that reached LA15 in 2013 (Figure 2). LA16 was sampled in 2005 but borehole leakage (Upper Aquifer influence) currently prevents obtaining a representative sample.

New Monitoring Well Locations

Up to four locations for new monitoring wells are proposed in the Basin. The wells would be nested designs, similar to the LA40/41 well pair, with one casing in Zone E and one in Zone D. Two of the wells are located on County land (Site A and Site B), one well (Site C) is tentatively located on private property (subject to property owner consent), and the fourth well (Site D) is tentatively on San Luis Coastal Unified School District property (subject to school district consent). Table 2 presents the depth and proposed screened intervals of the new monitoring wells.

Table 2. Proposed New Monitoring Wells

Site ID	Location	Elevation	Borehole Depth	Zone D Screen	Zone E Screen
		(feet)			
Site A	Skyline	50	500	300-340	440-490
Site B	Broderson	220	800	370-410	700-780
Site C	Ramona	50	500	330-370	450-490
Site D	Sunnyside	150	800	390-440	700-780

The locations of the proposed new monitoring wells are shown in Figure 1, and the depths and monitored intervals within Zones D and E are shown with respect to the inferred seawater intrusion front in Figures 2 through 6. A brief summary of each well is provided below in the recommended order of construction (from highest to lowest priority):

Site A – Skyline

Site A is located in County right-of-way of Skyline Avenue (paved) at Broderson Avenue (unimproved). This well is recommended to replace key Chloride Metric well LA10, which is affected by borehole leakage and Upper Aquifer influence.

Site B - Broderson

Site B is located on County property at the Broderson recycled water disposal site, and will replace LA17, which was damaged during construction in 1985. A Lower Aquifer monitoring well at the Broderson site is recommended to evaluate the transmission of pressure from the Upper Aquifer groundwater mound into the Lower Aquifer.

Site C – Ramona Avenue

The Ramona Avenue site provides a second Lower Aquifer monitoring control point in the Baywood Park area (supplementing LA11). Site C would track potential Zone E intrusion moving inland of LA40, and help monitor conditions surrounding supply well LA12.

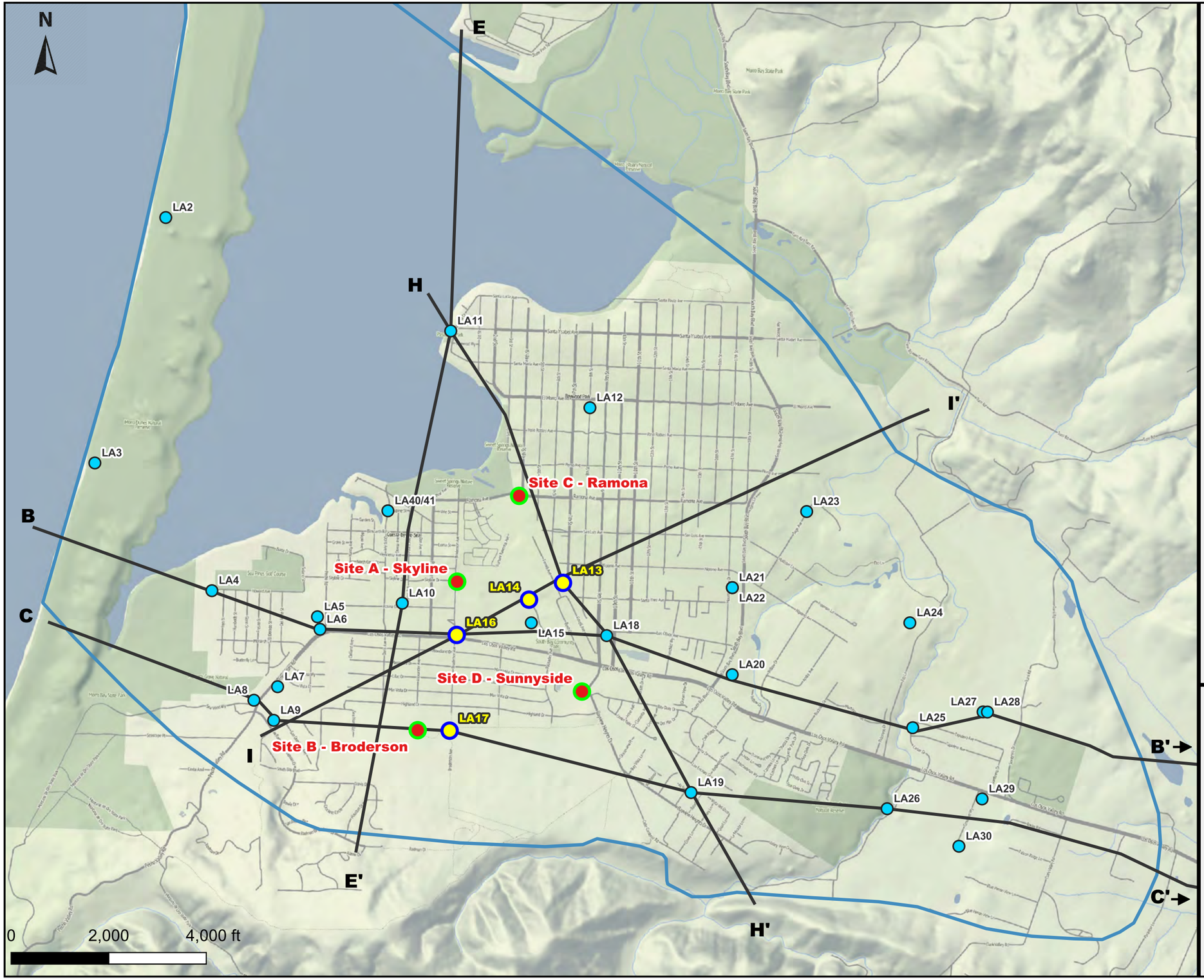
Site D – Sunnyside

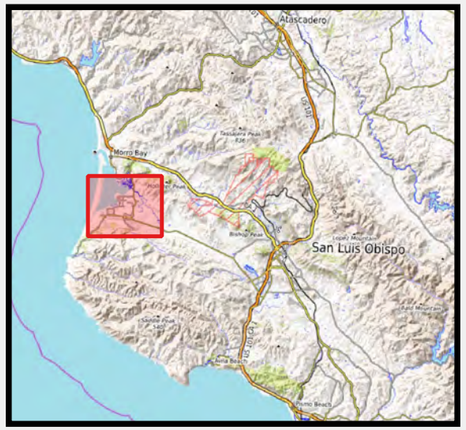
The Sunnyside well is tentatively located at Sunnyside School and, along with Site B, would monitor some of the deepest portions of Zone E. Site D would fill a gap in monitoring the Lower Aquifer southwest of downtown Los Osos.

Site A is assigned the highest priority, being the replacement for Chloride Metric well LA10. A nested monitoring well at Site A would differentiate Zone D intrusion from Zone E intrusion, which LA10 is not able to do (Figure 4). The anticipated design would be similar to the Lupine Street monitoring well (LA40/41), which was constructed in 2019 at a contractor cost of $90,000, with bids ranging from $90,000 to $126,500. Current estimated costs for a well at Site A would be between $140,000 and $160,000.

FIGURES

DRAFT





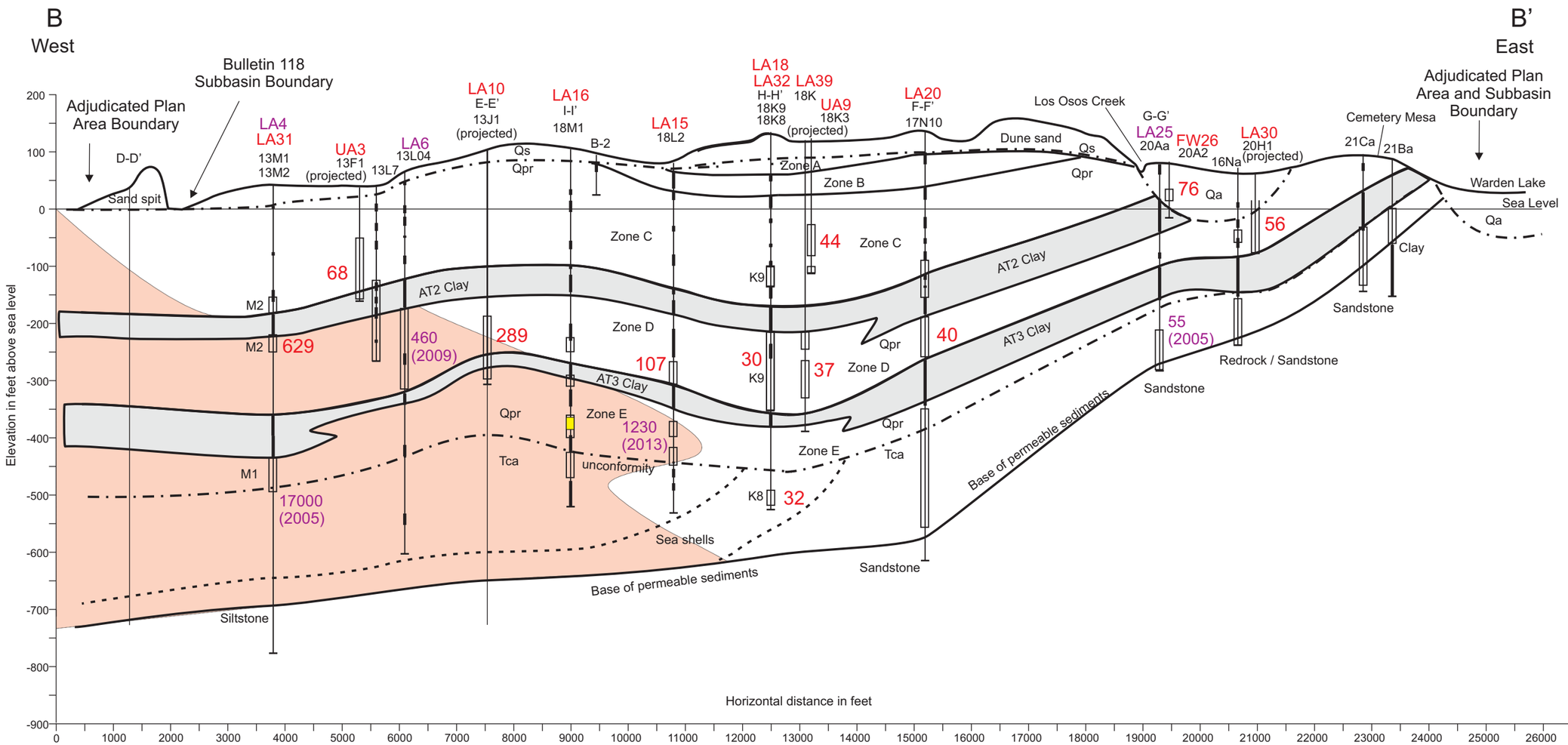
Explanation

- Basin Boundary
- Cross-section line
- Existing Lower Aquifer Well
- Existing Lower Aquifer Well Evaluated for Modification
- New Proposed Monitoring Well

Figure 1
Well Locations

Well Modification TM
Los Osos BMC

Cleath-Harris Geologists



Aquifer Zones:
Zone A - Perched Aquifer
Zone B - Transitional Aquifer
Zone C - Upper Aquifer
Zone D - Lower Aquifer (shallow)
Zone E - Lower Aquifer (deep)

Well data point
18M1 Well ID
Clay layer
Well screen
Clay layers not shown at projected wells

Formation:
Qa - alluvium
Qs - dune sand
Qpr - Paso Robles Formation
Tca - Careaga Formation

Cross-section alignment shown in Figure 1

LA31 - LOBP Monitoring Network ID

310 - Chloride concentration in mg/L (Fall 2021)

Estimated extent of seawater intrusion (Fall 2021)

460 - Historical Chloride concentration in mg/L (year listed)

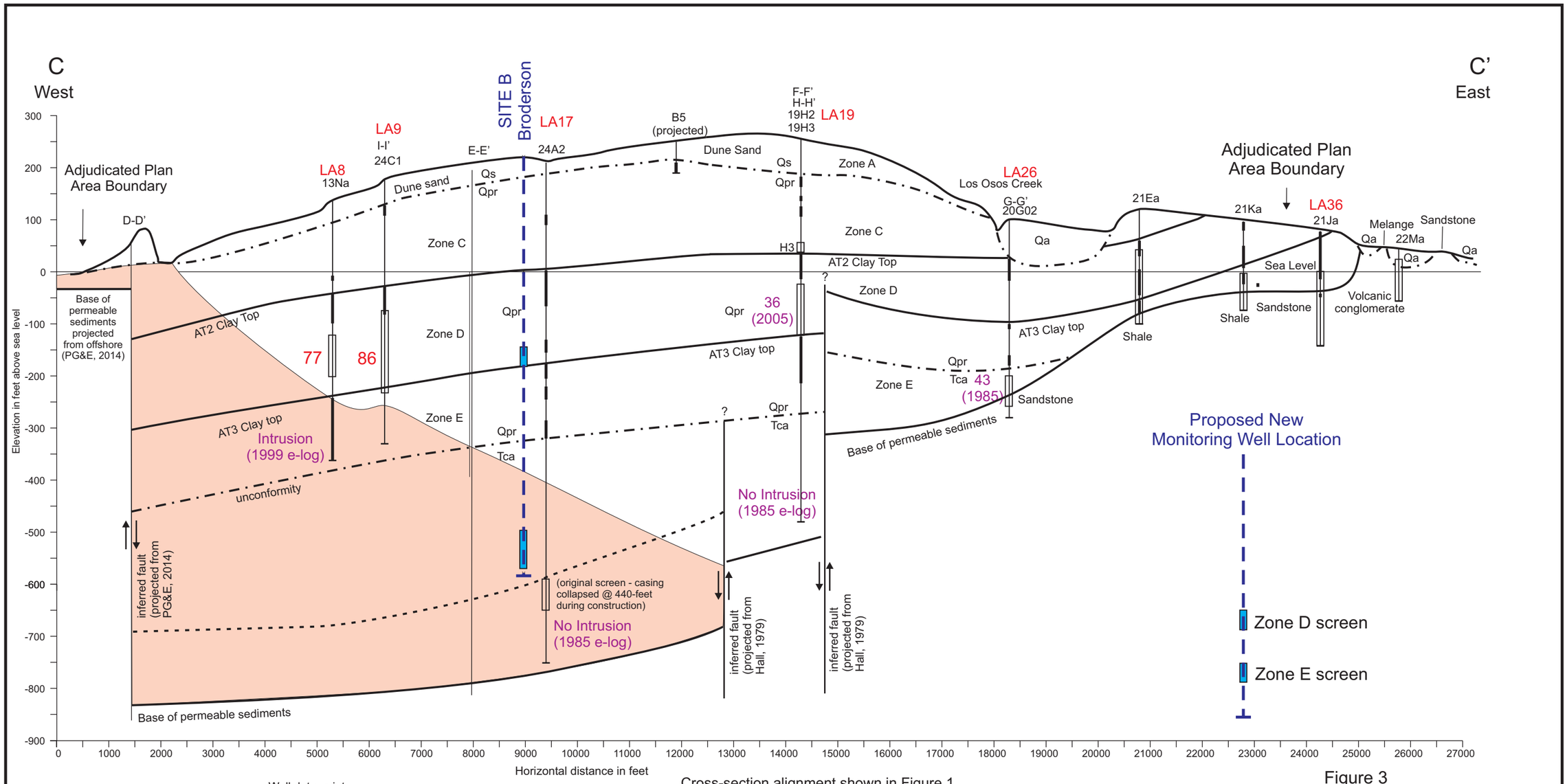
Proposed well modification to isolate screened interval at LA16 highlighted in yellow

Figure 2

Seawater Intrusion Front
Cross-Section B-B'
Los Osos Groundwater Basin
Well Modification TM

Cleath-Harris Geologists

DRAFT



Aquifer Zones:
Zone A - Perched Aquifer
Zone B - Transitional Aquifer
Zone C - Upper Aquifer
Zone D - Lower Aquifer (shallow)
Zone E - Lower Aquifer (deep)

Well data point
24A2 Well ID
Clay layer
Well screen

Formation:
Qa - alluvium
Qs - dune sand
Qpr - Paso Robles Formation
Tca - Careaga Formation

Cross-section alignment shown in Figure 1

LA8 - LOBP Monitoring Network ID

77 - Chloride concentration in mg/L (Fall 2021)

Estimated extent of seawater intrusion (Fall 2021)

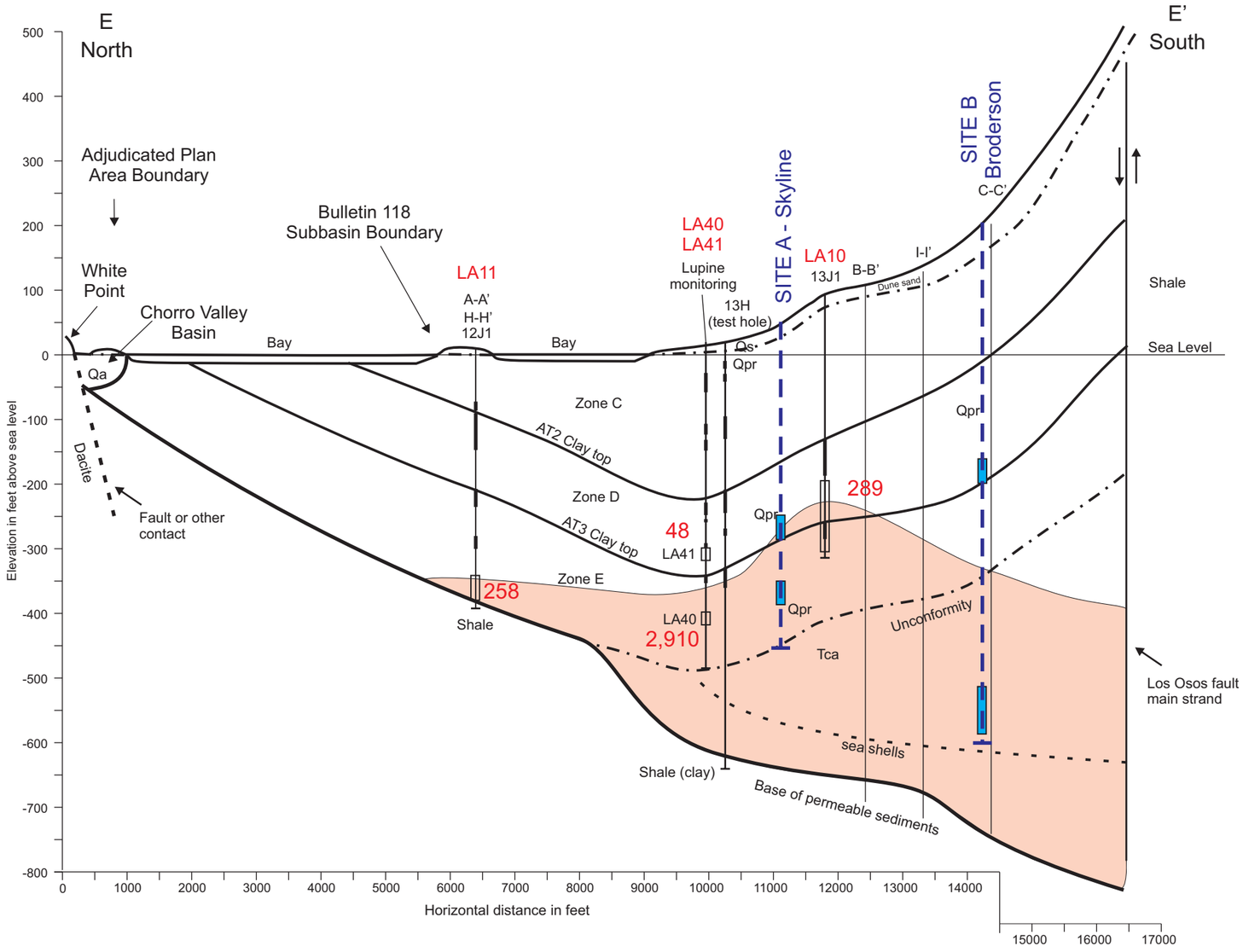
36 - Historical Chloride concentration in mg/L (year listed)

Figure 3

Cross-Section C-C'
Los Osos Groundwater Basin
Well Modification TM

Cleath-Harris Geologists

DRAFT



Proposed New Monitoring Well Location

Zone D screen

Zone E screen

Aquifer Zones:
Zone A - Perched Aquifer
Zone B - Transitional Aquifer
Zone C - Upper Aquifer
Zone D - Lower Aquifer (shallow)
Zone E - Lower Aquifer (deep)

Well data point
12J1 Well ID
Clay layer
Well screen

Formation:
Qa - alluvium
Qs - dune sand
Qpr - Paso Robles Formation
Tca - Careaga Formation

Cross-section alignment shown in Figure 1

LA11 - LOBP Monitoring Network ID

258 - Chloride concentration in mg/L (Fall 2021)

Estimated extent of seawater intrusion (Fall 2021)

Figure 4

Cross-Section E-E'
Los Osos Groundwater Basin
Well Modification TM

Cleath-Harris Geologsts

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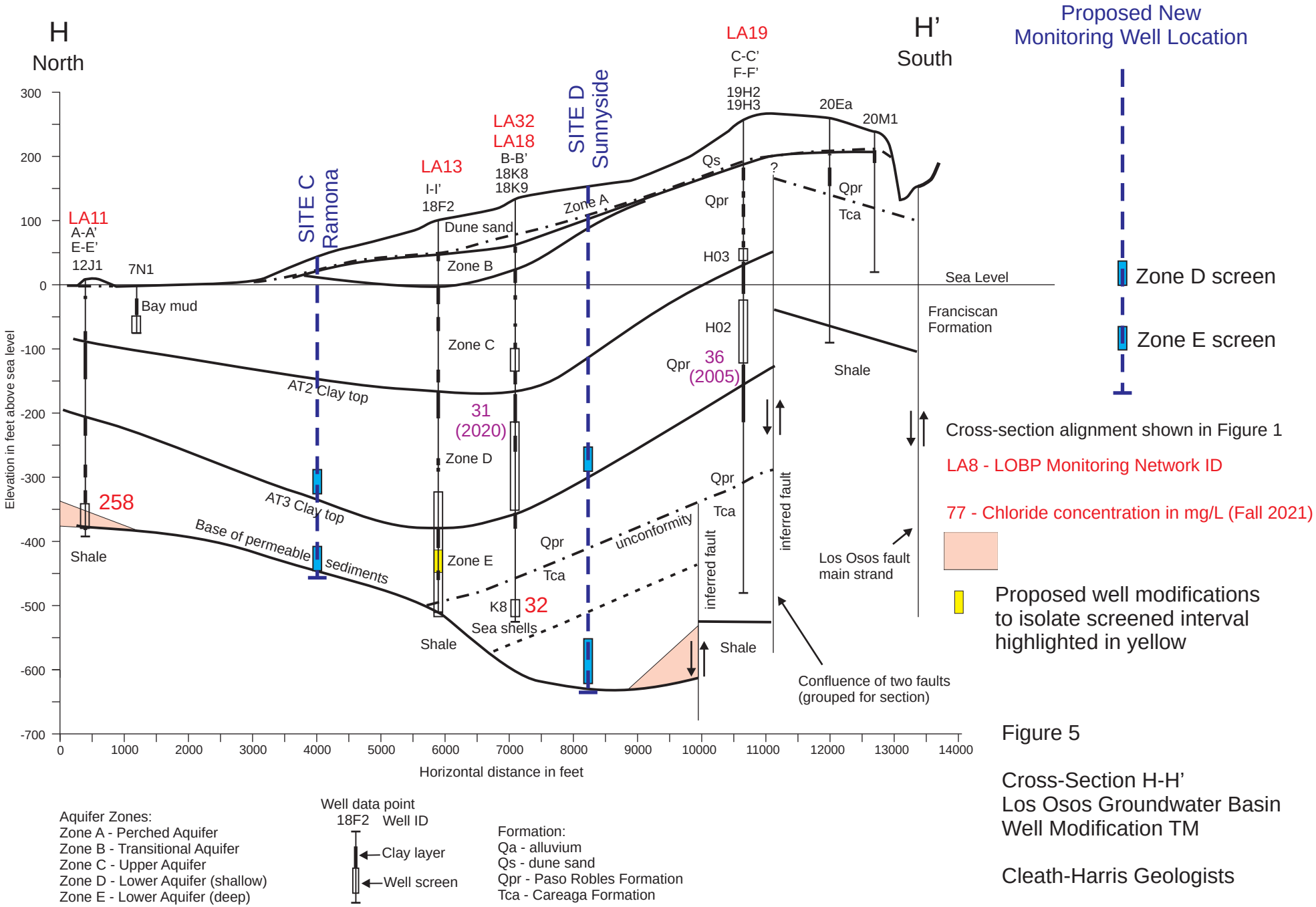

Proposed New Monitoring Well Location

Zone D screen

Zone E screen

Cross-section alignment shown in Figure 1

LA8 - LOBP Monitoring Network ID

77 - Chloride concentration in mg/L (Fall 2021)

Proposed well modifications to isolate screened interval highlighted in yellow

Aquifer Zones:
Zone A - Perched Aquifer
Zone B - Transitional Aquifer
Zone C - Upper Aquifer
Zone D - Lower Aquifer (shallow)
Zone E - Lower Aquifer (deep)

Well data point
18F2 Well ID
Clay layer
Well screen

Formation:
Qa - alluvium
Qs - dune sand
Qpr - Paso Robles Formation
Tca - Careaga Formation

Figure 5

Cross-Section H-H'
Los Osos Groundwater Basin
Well Modification TM

Cleath-Harris Geologists

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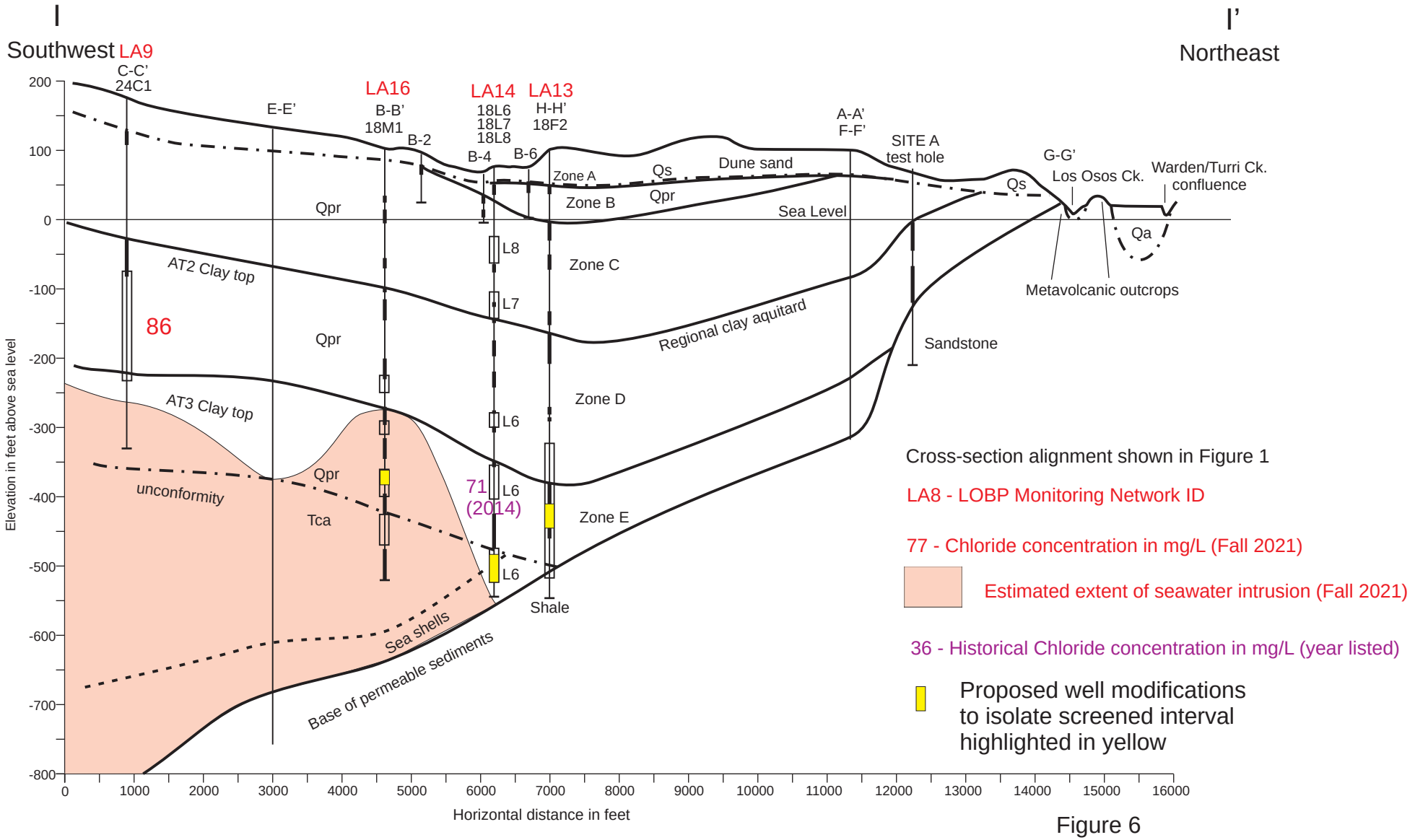

Cross-section alignment shown in Figure 1

LA8 - LOBP Monitoring Network ID

77 - Chloride concentration in mg/L (Fall 2021)

Estimated extent of seawater intrusion (Fall 2021)

36 - Historical Chloride concentration in mg/L (year listed)

Proposed well modifications to isolate screened interval highlighted in yellow

Aquifer Zones:
Zone A - Perched Aquifer
Zone B - Transitional Aquifer
Zone C - Upper Aquifer
Zone D - Lower Aquifer (shallow)
Zone E - Lower Aquifer (deep)

Well data point
18M1 Well ID
Clay layer
Well screen

Formation:
Qa - alluvium
Qs - dune sand
Qpr - Paso Robles Formation
Tca - Careaga Formation

Figure 6

Cross-Section I-I'
Los Osos Groundwater Basin
Well Modification TM

Cleath-Harris Geologists

APPENDIX A

Recommended Well Modification Details

Preliminary Well Modification Design – LA13 (30S/11E-18F2)

Site:	Los Osos CSD Yard between Ferrell Avenue and 7th Street, Los Osos, California
GPS Coordinates:	35.3159, -120.8358
Well Owner:	Los Osos Community Services District
Well Depth:	625 feet (currently sanded in at 536 feet)
Well Diameter:	12-inch steel with 8-inch steel liner beginning at 420 feet

SCOPE OF WORK

1) Submit well modification permit
2) Run camera to inspect existing construction.
3) Perform planned well modification as described below.

PLANNED MODIFICATION:

Liner Completion:	2.5-inch diameter, Sch 80 PVC casing (0.020-inch perforations 510-530 feet depth)

Annular Space inside existing well (from surface)

Seal #1:	Cement top seal (0-3 feet depth)
Inert fill:	Clean sand up to ¼ inch (3-400 feet depth)
Seal #2:	High solids bentonite slurry (400-490 feet depth)
Seal #3:	Bentonite chips 490-500 feet depth
Filter pack:	8 x 20 sand (500-532 feet depth)
Seal #4:	Bentonite chips 532-537 feet depth


038-612-003
074-251-005
038-612-035
038-612-036
074-251-006
038-612-005
074-252-006
038-612-026
038-612-027
074-231-026
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Google Earth
Earth Point

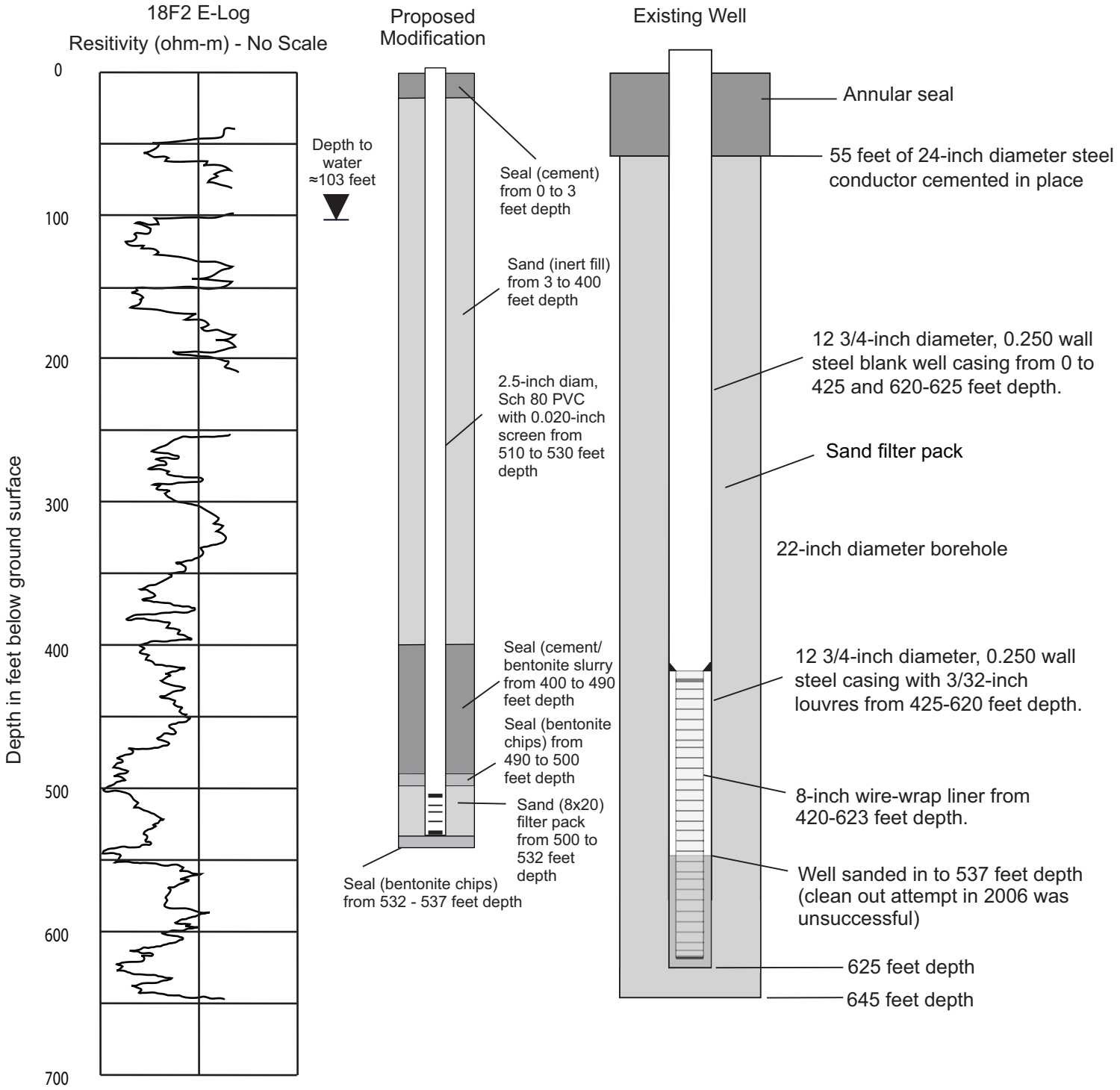


Figure 1
Well 18F2 (LA13)
Well Modification

Cleath-Harris Geologists

30S/11E-18F2

DUPLICATE
Retain this copy

THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

No. 77270
State Well No. 30S/11E-18F
Other Well No. #2 Ferrell

(1) OWNER: Ferrel #2 well
Name SLO County Service Area 9A, Baywood Park
Address
San Luis Obispo, Ca. 93401

(2) LOCATION OF WELL:
County SLO Owner's number, if any
Township, Range, and Section
Distance from cities, roads, railroads, etc.

(3) TYPE OF WORK (check):
New Well XX Deepening ☐ Reconditioning ☐ Destroying ☐
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal XX
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary Mud XX
Cable ☐
Other ☐

(6) CASING INSTALLED:
STEEL XX OTHER:
SINGLE XX DOUBLE ☐

From ft.	To ft.	Diam.	Gage or Wall
0	625	12 3/4"	.250

If gravel packed

Diameter of Bore	From ft.	To ft.
22"	0	625

Size of shoe or well ring welded bottom Size of gravel according to specs.
Describe joint welded

(7) PERFORATIONS OR SCREEN:
Type of perforation or name of screen ¼ Louvers

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
0	425	blank		
425	620	10	120	3/32
620	625	blank		

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes XX No ☐ To what depth 55 ft.
Were any strata sealed against pollution? Yes ☐ No XX If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing 24½" x ½" well conductor cemented in a 32" hole

(9) WATER LEVELS:
Depth at which water was first found, if known 420 ft.
Standing level before perforating, if known 48 ft.
Standing level after perforating and developing 60 ft.

(10) WELL TESTS:
Was pump test made? Yes XX No ☐ If yes, by whom McCoy Pump Co.
gal./min. with ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No XX
Was electric log made of well? Yes XX No ☐ If yes, attach copy

(11) WELL LOG:
Total depth 645 ft. Depth of completed well 625 ft.
Formation: Describe by color, character, size of material, and structure

ft.	to ft.	
0	45	sand
45	65	brown clay
65	70	gravel & sand
70	80	brown clay
80	105	brown clay & gravel
105	117	blue clay
117	120	shale gravel
120	170	brown sandy clay
170	180	brown sand & gravel
180	245	brown clay
245	255	gravel & sand
255	270	brown clay
270	280	blue clay
280	285	sand, some gravel
285	300	blue clay
300	340	brown clay, some gravel & sand
340	420	brown sandy clay
420	455	lite brown sandy shale gravel
455	515	brown clay
515	537	lite clay
537	555	hard sandstone
555	600	sand & gravel (sandy)
600	610	gravel & sea shale (sandy)
610	645	brown shale

Work started 9/2/75 19 Completed 9/11/75

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Miller Drilling Co.
(Person, firm, or corporation) (Typed or printed)
Address Rt. A 1, Box 22
Paso Robles, Ca. 93446
[SIGNED] R. H. Miller (Well Driller)
License No. 236900 Dated 9/22/75, 19

SKETCH LOCATION OF WELL ON REVERSE SIDE

Preliminary Well Modification Design – LA14 (30S/11E-18L6)

Site:	County easement at north end of Palisades Ave, Los Osos, California
GPS Coordinates:	35.3149, -120.8381
Well Owner:	San Luis Obispo County
Well Depth:	600 feet (currently sanded in at 554 feet).
Well Diameter:	6-inch PVC

SCOPE OF WORK

1) Submit well modification permit
2) Submit County encroachment permit (if needed).
3) Temporarily remove portion of traffic barricade to access well (optional).
4) Clean out well from 544 to 600 feet.
5) Run camera to inspect existing construction.
6) Perform planned well modification as described below.
7) Re-install traffic barricade as needed.

PLANNED MODIFICATION:

Liner Completion:	2.5-inch diameter, Sch 80 PVC casing (0.020-inch perforations 550-590 feet depth)

Annular Space inside existing well (from surface)

Seal #1:	Cement top seal (0-3 feet depth)
Inert fill:	Commercial sand up to ¼ inch (3-340 feet depth)
Seal #2:	High solids bentonite slurry (340-500 feet depth)
Seal #3:	Bentonite chips 500-510 feet depth
Filter pack:	8 x 20 sand (510-600 feet depth)


074-229-026
LA14-1816
074-229-024
074-252-018
074-229-012
Google Earth
Earth Point


END

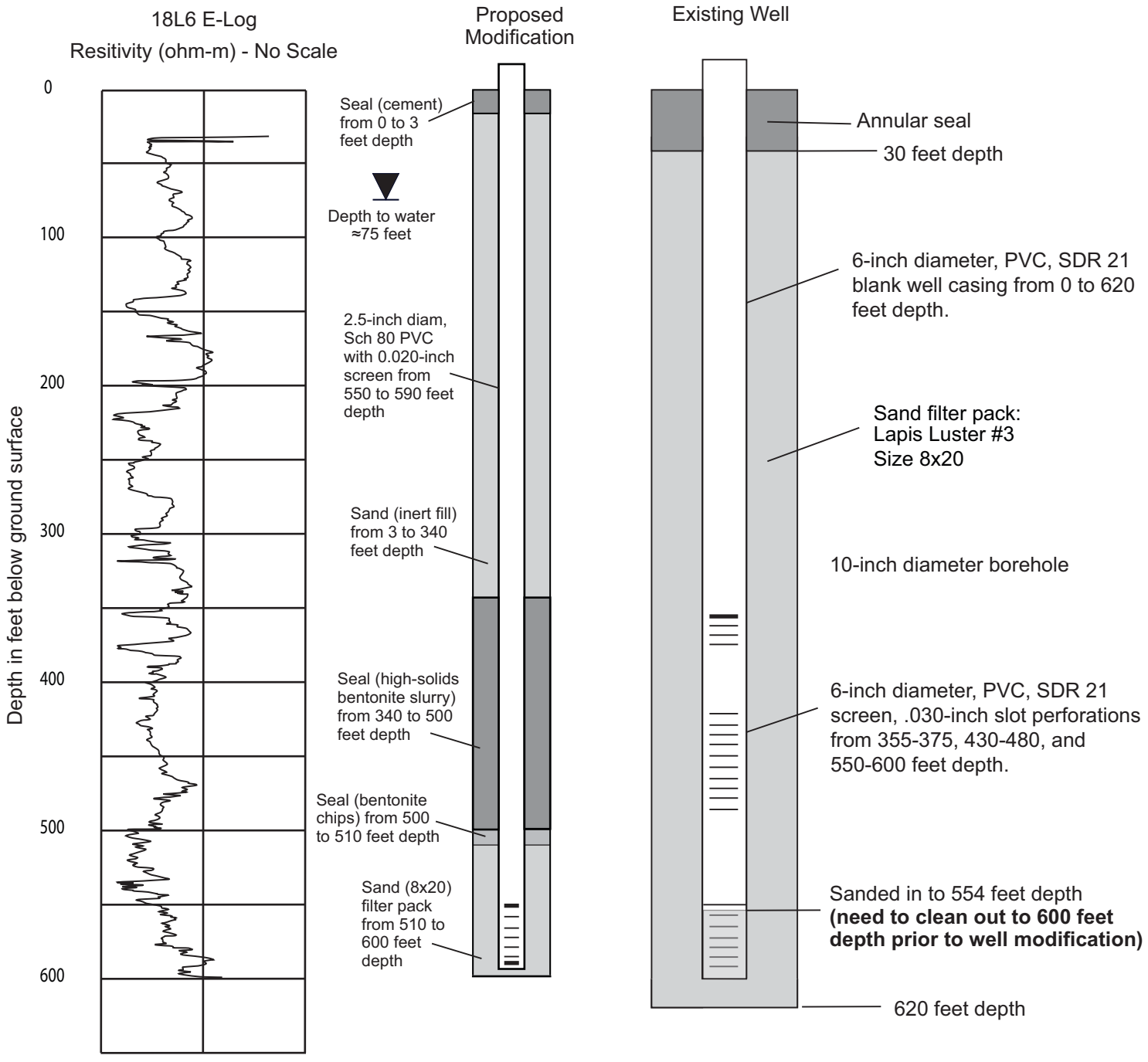


Figure 2
Well 18L6 (LA14)
Well Modification

Cleath-Harris Geologists

30S/11E-18L6

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not

No. 17370

Notice of Intent No.

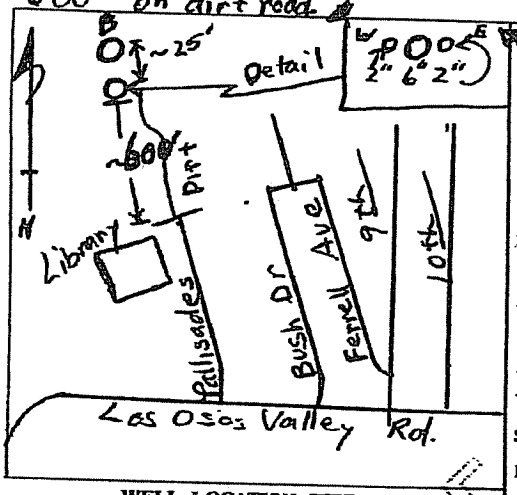
Local Permit No. or Date

State Well No. 30S/11E-18L

Other Well No. ~~Tor~~ Pallsc

(1) OWNER: Name U.S. Geological Survey-WRD
Address 2800 Cottage Way
City Sacramento Zip 95825

(2) LOCATION OF WELL (See instructions):
County San Luis Obispo Owner's Well Number
Well address if different from above ~~Library~~ Palisades
Township Range Section
Distance from cities, roads, railroads, fences, etc. From Los Osos Valley Road proceed North on Pallisades past library to end of road, continue northerly another 600' on dirt road.



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☐
Irrigation ☐
Industrial ☐
Test Well ☒
Stock ☐
Municipal ☐
Other ☐

(5) EQUIPMENT:
Rotary ☒ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK: Lapis Lustre #2 Size Bm 20
Yes ☒ No ☐
Diameter of bore 9⅞ inches
Packed from 620 to 80 ft.

(7) CASING INSTALLED:
Steel ☐ Plastic ☒ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	605	6	SDR21

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size
355	375	.030
430	480	"
550	600	"

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 20 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 260-265
Method of sealing cement / Bentonite 300-305 570-575

(10) WATER LEVELS:
Depth of first water, if known ft.
Standing level after well completion 92 ft.

(11) WELL TESTS:
Was well test made? Yes ☒ No ☐ If yes, by whom?
Type of test Pump ☒ Bailer ☐ Air lift ☐
Depth to water at start of test 99 ft. At end of test 112 ft
Discharge 60 gal/min after 1 hours Water temperature 7.5°C
Chemical analysis made? Yes ☒ No ☐ If yes, by whom? USGS
Was electric log made? Yes ☒ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 620 ft. Depth of completed well 6

from ft.	to ft.	Formation (Describe by color, character, size or materia
		See attached sheet

Work started 19 Completed 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of knowledge and belief.

SIGNED (Well Driller)
NAME USGS-WRD Western Region Drilling Co (Person, firm, or corporation) (Typed or printed)
Address 345 Middlefield Road
City Menlo Park Zip 94025
License No. Date of this report 8-14-85

DWR 188 (REV 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Preliminary Well Modification Design – LA16 (30S/11E-18M1)

Site:	County easement at northeast corner of the Los Osos Valley Road and Broderson Ave, Los Osos, California
GPS coordinates:	35.3128, -120.8430
Well Owner:	San Luis Obispo County
Well Depth:	577 feet (currently sanded in at 511 feet)
Well Diameter:	10-inch steel

SCOPE OF WORK

1) Submit well modification permit.
2) Submit County encroachment permit (if needed).
3) Expose and remove existing steel top plate to access well.
4) Run camera to inspect existing construction.
5) Perform planned well modification as described below.

PLANNED MODIFICATION:

Liner Completion:	2.5-inch diameter, Sch 80 PVC casing (0.020-inch perforations 470-500 feet depth)

Annular Space inside existing well (from surface)

Seal #1:	Cement top seal (0-3 feet depth)
Inert fill:	Commercial sand up to ¼ inch diameter (3-320 feet depth)
Seal #2:	High solids bentonite slurry (320-440 feet depth)
Seal #3:	Bentonite chips 440-450 feet depth
Filter pack:	8 x 20 sand (450 to 505 feet depth)
Seal #4:	Bentonite chips 505-511 feet depth
Wellhead:	Install traffic-rated well box with cement pad (ground surface is above existing wellhead)


074-052-049
LA16-18M1
074-184-023
074-184-024
074-184-008
074-184-009
074-184-010
074-061-023
074-061-002
074-061-003
074-061-004
Google Earth

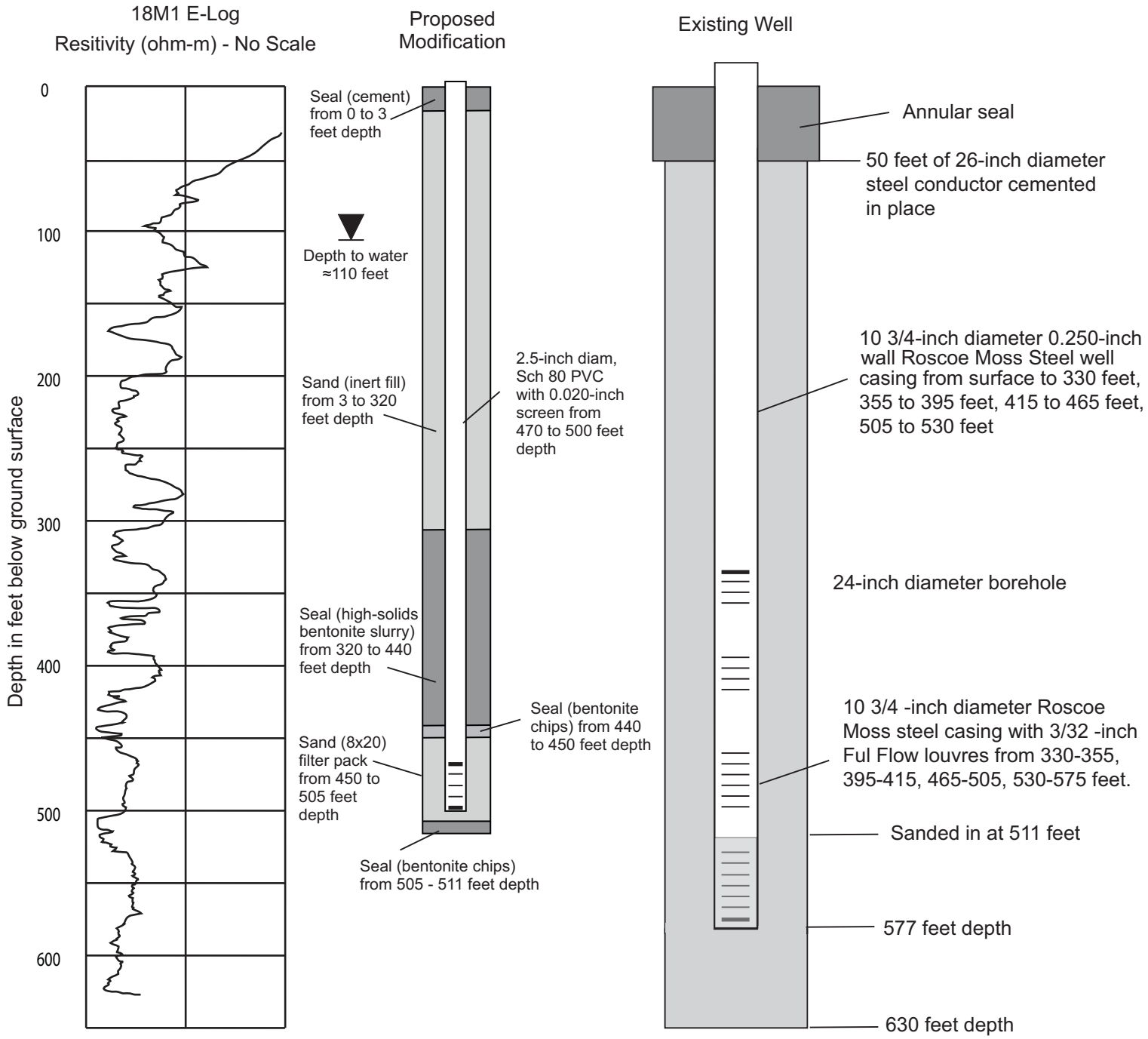


Figure 3
Well 18M1 (LA16)
Well Modification

Cleath-Harris Geologists

305/11E - 18M1

given to County

given to County Broderson/LOVR

Irrigation Systems
Sales and Service

Licensed
Drilling
Contractors

FLOYD V. WELLS, INC.

1337 West Betteravia Road • Phone WAlnut 5-8626
SANTA MARIA, CALIFORNIA 93454

Mailing Address:
Post Office Box 1007
Santa Maria, California

Goleta Office:
5798 Dawson Ave.
Phone 967-4124
Santa Maria
Phone ZEnith 2-7726

Los Osos #5

Log of well drilled for : California Cities Water Co., Baywood Park

Location : 85 ft. north of center line Los Osos Valley Rd., 40 ft. east of center line Broderson Ave.

Surface seal : 50 ft. of 26" x .250 wall pipe cemented in place

Well bore : 24"

Casing : 577 ft. of 10 3/4" x .250 wall Roscoe Moss Ful Flow

Perforations : 575 ft. to 530 ft., 505 ft. to 465 ft., 415 ft. to 395 ft., 355 ft. to 330 ft., 3/32" Ful Flow louvres

Well completed : 10 July 1973

Formation

From	0	to	70	feet	Fine brown sand
"	70	"	110	"	Reddish brown sand and sandy clay
"	110	"	160	"	Brown sand and sandy clay
"	160	"	165	"	Brown snad
"	165	"	245	"	Brown sandy clay with strips of fine sand
"	245	"	265	"	Brown clay with sand and gravel
"	265	"	275	"	Brown sandy clay with small amount of gravel
"	275	"	295	"	Fine sand and sandy clay
"	295	"	328	"	Sandy brown clay with sand strips
"	328	"	338	"	Brown sandy clay with sand and gravel
"	338	"	350	"	Brown sandy clay with sand strips
"	350	"	372	"	Sand and gravel with clay
"	372	"	392	"	Brown sandy clay with sand and small amount gravel
"	392	"	402	"	Fine sand and sandy clay
"	402	"	420	"	Sandy brown clay with sand strips
"	420	"	436	"	Blue and brown sandy clay
"	436	"	460	"	Brown sandy clay with sand strips
"	460	"	477	"	Brown sandy clay with sand and gravel
"	477	"	490	"	Brown sandy clay with sand and small amount gravel
"	490	"	495	"	Brown sandy clay

- continued -

Log of well drilled for : California Cities Water Co., Baywood Park

Formation					
From	495	to	525	feet	Black clay and blue clay with fine sand
"	525	"	536	"	Brown sandy clay and fine sand
"	536	"	562	"	Sand and gravel with small amount of clay
"	562	"	570	"	Blue and brown sandy clay and gravel
"	570	"	630	"	Brown sandy clay and gravel

APPENDIX B

Estimated Well Modification Contractor Costs
Filipponi & Thompson Drilling, Inc.

Filipponi & Thompson Drilling, Inc.
PO Box 845
Atascadero, CA 93423

TEL: (805)466-1271 FAX: (805)466-2388

Filipponi & Thompson Drilling Inc.
License No. CA57-432680

Estimate

DATE	ESTIMATE #
6/2/2022	1276

NAME / ADDRESS
LOS OSOS C.S.D. 2122 9TH STREET, STE. 110 LOS OSOS, CA 93402

E-mail: RMUNDS@losososcsd.org

Project: LA13 (30S/11E-18F2)

DESCRIPTION	QTY	COST	TOTAL
LOS OSOS CSD			
C/O SPENCER HARRIS			
WELL LA13 (30S/11E-18F2)			
ESTIMATE FOR WELL MODIFICATIONS.			
12" STEEL WELL WITH 8" STEEL LINER AT 420 FT.			
WELL MODIFICATION PERMIT	1	1,200.00	1,200.00
VIDEO WELL	1	2,250.00	2,250.00
PERFORM WELL MODIFICATION	1	6,000.00	6,000.00
510' - 2 1/2" FLUSH WALL PVC SCH. 80	1	13,700.00	13,700.00T
20' - 2 1/2" FLUSH WALL PVC SCH. 80 0.020" PERFORATIONS	1	540.00	540.00T
2 1/2" FLUSH WALL CAPS	1	150.00	150.00T
5' (532' - 537') BENTONITE CHIPS	1	150.00	150.00T
32' (500' - 532') 8 X 20 SAND	1	200.00	200.00T
10' (490' - 500') BENTONITE CHIPS	1	200.00	200.00T
90' (400' - 490') HIGH SOLIDS BENTONITE SLURRY	1	300.00	300.00T
397' (3'-400') COMMERCIAL SAND	1	1,400.00	1,400.00T
3' (0-3') CEMENT TOP	1	100.00	100.00T
*** ESTIMATE INCLUDES LABOR COST ***		0.00	0.00
Sales Tax		7.25%	1,213.65

TO ACCEPT THIS OFFER, PLEASE SIGN BELOW AND RETURN THIS CONTRACT TO OUR OFFICE.

TOTAL $27,403.65

THIS OFFER WILL EXPIRE AFTER 30 DAYS UNLESS ACCEPTED.

Operator

Signature Date

I ACCEPT THE ABOVE OFFER

Filipponi & Thompson Drilling, Inc.
PO Box 845
Atascadero, CA 93423

TEL: (805)466-1271 FAX: (805)466-2388

Filipponi & Thompson Drilling Inc.
License No. CA57-432680

Estimate

DATE	ESTIMATE #
6/2/2022	1278

NAME / ADDRESS

LOS OSOS C.S.D.
2122 9TH STREET, STE. 110
LOS OSOS, CA 93402

E-mail

RMUNDS@losososcsd.org

Project

LA14 (30S/11E-18L6)

DESCRIPTION	QTY	COST	TOTAL
LOS OSOS CSD			
C/O SPENCER HARRIS			
WELL LA14 (30S/11E-18L6)			
ESTIMATE FOR WELL MODIFICATION. 6" PVC WELL			
WELL MODIFICATION PERMIT	1	1,200.00	1,200.00
REMOVE & INSTALL TRAFFIC BARRICADE (IF NEEDED)	1	2,000.00	2,000.00
CLEAN OUT WELL FROM 544' - 600'	1	4,800.00	4,800.00
VIDEO WELL	1	2,000.00	2,000.00
PERFORM WELL MODIFICATION	1	6,000.00	6,000.00
560' - 2 1/2" FLUSH WALL PVC SCH. 80	1	15,120.00	15,120.00T
40' - 2 1/2" FLUSH WALL PVC 0.020" PERFORATIONS	1	1,080.00	1,080.00T
2 1/2' FLUSH WALL CAPS	1	150.00	150.00T
90' (510' - 600') 8 X 20 SAND	1	300.00	300.00T
10' (500' - 510') BENTONITE CHIPS	1	100.00	100.00T
160' (340' - 500') HIGH SOLIDS BENTONITE SLURRY	1	300.00	300.00T
337' (3' - 340') COMMERCIAL SAND	1	500.00	500.00T
3' (0 - 3') CEMENT TOP	1	50.00	50.00T
TOOL FABRICATION	1	2,000.00	2,000.00
AIR COMPRESSOR	1	2,000.00	2,000.00
ESTIMATE INCLUDES LABOR COST	1	0.00	0.00
COUNTY ENCROACHMENT PERMIT TO BE OBTAINED BY OTHERS			
Sales Tax		7.25%	1,276.00

TO ACCEPT THIS OFFER, PLEASE SIGN BELOW AND RETURN THIS CONTRACT TO OUR OFFICE.

TOTAL **$38,876.00**

THIS OFFER WILL EXPIRE AFTER 30 DAYS UNLESS ACCEPTED.

Operator

Signature Date

I ACCEPT THE ABOVE OFFER

Filipponi & Thompson Drilling, Inc.
PO Box 845
Atascadero, CA 93423

Filipponi & Thompson Drilling Inc.
License No. CA57-432680

TEL: (805)466-1271 FAX: (805)466-2388

Estimate

DATE	ESTIMATE #
6/2/2022	1277

NAME / ADDRESS
LOS OSOS C.S.D. 2122 9TH STREET, STE. 110 LOS OSOS, CA 93402

E-mail: RMUNDS@losososcsd.org

Project: LA16 (30S/11E-18MI)

DESCRIPTION	QTY	COST	TOTAL
LOS OSOS CSD			
C/O SPENCER HARRIS			
WELL LA16 (30S/11E-18M1)			
ESTIMATE FOR WELL MODIFICATION. 10" STEEL WELL			
WELL MODIFICATION PERMIT	1	1,200.00	1,200.00
EXPOSE AND REMOVE STEEL PLATE TO ACCESS WELL	1	2,400.00	2,400.00
VIDEO WELL	1	2,000.00	2,000.00
PERFORM WELL MODIFICATION	1	6,000.00	6,000.00
470' - 2 1/2" FLUSH WALL PVC SCH. 80	1	12,690.00	12,690.00T
30' - 2 1/2" FLUSH WALL PVC SCH. 80 0.020" PERFORATIONS	1	810.00	810.00T
2 1/2' FLUSH WALL CAPS	1	150.00	150.00T
6' (505' - 511') BENTONITE CHIPS	1	150.00	150.00T
55' (450' - 505') 8 X 20 SAND	1	300.00	300.00T
10' (440' - 450') BENTONITE CHIPS	1	150.00	150.00T
120' (320' - 440') HIGH SOLIDS BENTONITE SLURRY	1	500.00	500.00T
317' (3' - 320') COMMERCIAL SAND	1	1,400.00	1,400.00T
3' (0 - 3') CEMENT TOP	1	100.00	100.00T
ESTIMATE INCLUDES LABOR COST	1	0.00	0.00
COUNTY ENCROACHMENT PERMIT TO BE OBTAINED BY OTHERS			
Sales Tax		7.25%	1,178.13

TO ACCEPT THIS OFFER, PLEASE SIGN BELOW AND RETURN THIS CONTRACT TO OUR OFFICE.

TOTAL **$29,028.13**

THIS OFFER WILL EXPIRE AFTER 30 DAYS UNLESS ACCEPTED.

Operator

Signature Date

I ACCEPT THE ABOVE OFFER

Form 3106
(Oct. 2002)

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
WELL TRANSFER AGREEMENT

Agreement Number:

The U.S. Geological Survey (USGS) agrees to transfer ownership of the observation well(s), hereinafter referred to as "the well," or "wells" located at

Latitude: 35°18'55"

Longitude: 120°50'14" NAD27

and/or USGS 351855120501401 030S011E18L006M

to the Los Osos Community Services District
herein referred to as "Landowner," giving the Landowner all ownership rights to the well(s).

Landowner agrees to assume responsibility for the noted wells(s). Landowner agrees to accept the well(s) "as is" and to not hold USGS or the U.S. Government responsible in any way for any construction deficiencies or repairs that may be needed to make the well to meet any safety, government, or other standards. Landowner agrees to: (a) accept responsibility for any liability, such as liens, fines, damages, penalties, forfeitures or judgments arising from the continued use of existence of the well(s); (b) release the USGS and the U.S. Government for liability for any injuries or damage to persons and /or property of any kind arising out of the continued use of existence of the well(s); and (c) indemnify the USGS and the U.S. Government from any claims arising out of the use of existence of the well(s). If Landowner chooses or is forced to abandoned a well, Landowner agrees to assume full responsibility for its disposition in compliance with applicable federal, state, and local laws.

The transfer of the noted well(s) is effective on the date of this agreement is fully executed.

U.S. GEOLOGICAL SURVEY

By ANKE MUELLER-SOLGER Digitally signed by ANKE MUELLER-SOLGER Date: 2023.09.14 13:43:28 -07'00'

Date 9/14/2023

TRANSFEREE

By

Date

Notary Seal:

Form 3106
(Oct. 2002)

U.S. DEPARTMENT OF THE INTERIOR
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Longitude: 120°50'14" NAD27

and/or USGS 351855120501402 030S011E18L007M

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The transfer of the noted well(s) is effective on the date of this agreement is fully executed.

U.S. GEOLOGICAL SURVEY

By ANKE MUELLER-SOLGER Digitally signed by ANKE MUELLER-SOLGER Date: 2023.09.14 13:44:35 -07'00'

Date 9/14/2023

TRANSFEREE

By

Date

Notary Seal:

Form 3106
(Oct. 2002)

U.S. DEPARTMENT OF THE INTERIOR
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The transfer of the noted well(s) is effective on the date of this agreement is fully executed.

U.S. GEOLOGICAL SURVEY

By

ANKE MUELLER-SOLGER

Digitally signed by ANKE MUELLER-SOLGER
Date: 2023.09.14 13:45:45 -07'00'

Date

9/14/2023

TRANSFEREE

By

Date

Notary Seal: