AMERICAN AVENUE DISPOSAL SITE: PHASE I GROUNDWATER MONITORING WELL DECOMMISSIONING WORK PLAN

18950 WEST AMERICAN AVENUE KERMAN, CALIFORNIA 93630

MARCH 2019
PROJECT NO. 2016.A086

PREPARED FOR:

COUNTY OF FRESNO
Department of Public Works and Planning
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1.0 INTRODUCTION

The following Work Plan was prepared to describe the procedures for decommissioning the Phase I groundwater monitoring wells identified as DMW-1 through DMW-10 at the American Avenue Disposal Site (AADS), which is owned and operated by the County of Fresno Department of Public Works and Planning. This Work Plan includes a brief background on the monitoring wells along with the available information on well construction and the procedures to be employed during well decommissioning. All wells are located within the AADS facility boundary at 18950 West American Avenue, Kerman, California as shown on Figure 1.

This Work Plan is part of the Phase I waste relocation project described in detail in the AADS Phase I Waste Relocation Work Plan (Geo-Logic Associates [GLA], 2017). The Phase I detection and corrective action monitoring wells scheduled for decommissioning in conjunction with the waste relocation project are identified as DMW-6 and DMW-10, and DMW-2, DMW-4, and DMW-8, respectively. The inactive wells that will be decommissioned during the Phase I waste relocation project are identified as DMW-1, DMW-3, DMW-5, DMW-7, and DMW-9 (SOMA Environmental Engineering [SOMA], 2017). All monitoring wells were installed in June and July 1987 by Arthur and Orum Well Drilling of Fresno, California (C-57 driller's license No.361319). The 10 wells were installed along the eastern side of the AADS Phase I waste management unit (Phase I), approximately 50 feet east of the existing landfill cover limits, and are numbered 1 through 10 from north to south as shown on Figure 2.

Wells DMW-2, DMW-4, DMW-6, DMW-8, and DMW-10 are currently part of the AADS groundwater compliance monitoring well network (SOMA, 2017). Although they will be decommissioned as part of the Phase I waste relocation project, all remaining groundwater monitoring wells will continue to be used as part of the Detection Monitoring Program (DMP) or Corrective Action Program (CAP) (reference Figure 2).

1.1 Background

1.1.1 Location and Topography

The AADS is located in Kerman, California (Figure 1) southwest of Fresno. The facility is located on relatively flat terrain within the San Joaquin Valley and occupies approximately 440 acres, of which 361 acres are permitted for waste disposal. Native ground surface elevations range from approximately 180 feet above mean sea level (amsl) USGS datum at the southwestern site boundary, to approximately 190 feet amsl at the northeastern site boundary (EMCON/OWT, 2006). Phase I is centrally located within the AADS and has an aerial extent of about 30 acres as shown on Figure 2.

1.1.2 Phase I Compliance Wells (DMW-1 through DMW-10)

Wells DMW-1 through DMW-10 were installed as part of the Phase I detection monitoring program at the AADS in 1987. Upon completion of the wells and sampling of the groundwater, it was found that the groundwater had concentrations of several waste constituents below primary drinking water standards. In 1998 the Central Valley Regional Water Quality Control Board (RWQCB) issued Cleanup and Abatement Order (CAO) No. 98-702 in response to the sporadic detections of contaminants within the groundwater underlying the AADS (Babcock, 2017).

According to the 2017 First Semi-Annual CAP Report (Babcock, 2017), the County developed an evaluation and monitoring program (EMP) work plan in 1998, and submitted it to the RWQCB in 2006. The EMP was established to investigate the source and extent of the groundwater contamination detected in the wells. The results of the evaluation and monitoring program established that the contaminants were derived from landfill gas (LFG) and had created a downgradient plume approximately 2,400 feet towards the eastern AADS boundary. The corrective action selected, based on an engineering feasibility study, was monitored natural attenuation along with LFG extraction within Phase I.

Because of the groundwater impacts and the associated Abatement Order, the County has been discussing the possibility of clean closing Phase I with the RWQCB for a number of years. Based on those discussions the RWQCB has included a statement regarding the relocation of Phase I wastes in the facility WDRs as far back as 2000. In addition to mitigating environmental impacts, the County plans to remove the unlined Phase I wastes because they are located in the area of future Phase III Modules 10, 11, and 12. To reduce the chances of a potential planning conflict, the County has planned to relocate the Phase I wastes well in advance of the need for additional Phase III modules.

With the excavation and relocation of Phase I wastes, LFG production at Phase I will cease and the bulk of the groundwater contaminant source will be removed. Removal of the LFG source material will render the detection and corrective action monitoring wells located in the immediate vicinity of Phase I (DMW-2, DMW-4, DMW-6, DMW-8, and DMW-10) as no longer necessary, and corrective action monitoring can be shifted completely to the perimeter wells DMW-12, DMW-20, and DMW-25. The inactive wells (DMW-1, DMW-3, DMW-5, DMW-7, and DMW-9) will also be decommissioned to remove potential contamination pathways to groundwater and to vacate the space for future Phase III module construction.

1.1.3 Hydrogeologic Conditions

Regional groundwater conditions have been described extensively in the SWAT Proposal and reports performed by EMCON Associates (June, 1984) and Kenneth D. Schmidt, Groundwater

Quality Consultant (June, 1982). A summary of regional groundwater information is provided below based primarily on the most recent groundwater monitoring report (SOMA, 2017).

Regional groundwater flow directions in the site area are indicated to be to the south and east toward a large pumping depression (EMCON, 1984) centered 4 to 6 miles southwest of Raisin City. The primary source of recharge affecting the site is the area between the James Bypass and the Fresno Slough (Schmidt, 1982). This area lies approximately 4 to 8 miles west and southwest of the landfill.

AADS hydrogeologic conditions are characterized by a relatively deep water table local to the site, with the first encountered groundwater ranging from about 100 to 140 feet below the ground surface as reported in the most recent groundwater monitoring report for the first half of 2017 (SOMA, 2017). The aquifer underlying the AADS appears to be unconfined, and can fluctuate seasonally up to 10 feet (SOMA, 2017). Depth to groundwater near Phase I ranged from about 138 feet below ground surface (bgs) to 146 feet bgs based on SOMA (2017). Flow direction has historically been southeast, but was calculated by SOMA (2017) to be north 84˚ east with a gradient of 0.0028 feet/feet in February 2017, and north 88˚ east with a gradient of 0.0031 feet/feet in May 2017. SOMA (2017) reports that the hydraulic conductivity of geologic materials underlying the AADS range from about $1.0x10^{-5}$ to $1.0x10^{-3}$ centimeters/second.

1.2 Purpose and Scope

The objectives of this Work Plan are to identify the locations of the wells to be decommissioned, describe the procedures that will be used to decommission the wells, and describe the documentation requirements. The scope of work performed to meet these objectives included:

- Review of available information regarding site conditions, DMW-1 through DMW-10 completion details, and conceptual grading for the future Phase III modules that will be constructed in the vicinity of DWM-1 through DWM-10
- Development of decommissioning details for the wells
- Completion of this Work Plan to provide general site information, preliminary work requirements, decommissioning details, and reporting requirements

This Work Plan was prepared by a registered professional with direct experience in the decommissioning of groundwater monitoring wells.

2.0 EXISTING WELLS

2.1 Well Locations

As shown in Figure 2, Phase I of the AADS is a north-south trending waste management unit

located centrally on the AADS property. The 10 monitoring wells to be decommissioned (DMW-1 through DMW-10) are all located in a single row about 50 feet downgradient, or east of Phase I's eastern limit. The monitoring wells are spaced approximately 250 feet on center, with DMW-1 being the northern most monitoring well and DWM-10 being the southernmost.

2.2 Well Design

DWM-1 through DWM-10 were constructed as detection monitoring wells for Phase I. Based on the California Department of Water Resources (DWR) Water Well Drillers Report completed by the driller at the time of well construction, all 10 monitoring wells (DWM-1 through DWM-10) have the well construction summarized in Table 2-1 below.

TABLE 2-1
DWM-1 THROUGH DWM-10 WELL CONSTRUCTION DETAILS

GROUTED INTERVAL	0 to 97 feet below ground surface (bgs)
BENTONITE SEAL INTERVAL	97 to 100 feet bgs[1]
GRAVEL PACK INTERVAL	100 to 140 feet bgs
GRAVEL PACK TYPE	8 x 16[2]
BOREHOLE DIAMETER	10 inches
BLANK CASING INTERVAL	0 to 110 bgs
BLANK CASING DIAMETER	4 inches
BLANK CASING TYPE	Schedule 80 polyvinyl chloride (PVC)
SCREEN INTERVAL	110 to 140 feet bgs
SCREEN DIAMETER	4 inches
SCREEN TYPE	Schedule 80 PVC
SCREEN OPENINGS	0.045 inches
TOTAL DEPTH	140 feet

[1]DWR logs indicate wells DMW-5 through DMW-10 have a bentonite plug from 97 to 100 feet bgs and a gravel pack from 97 feet to 140 feet bgs. GLA assumes this is an error in the report, and construction is as listed in Table 2-1.
[2]DWR logs indicate MW-8 is has a gravel pack type of 8 x 12.

3.0 WELL DECOMMISSIONING

Wells DMW-1 through DMW-10 will be abandoned in general accordance with the California Department of Water Resources Bulletin 74-81/91 (Water Code) and Fresno County Department of Public Health – Environmental Health Division (EHD) Well Destruction Requirements. Decommissioning of the wells will be completed in two phases consisting of preliminary work and well destruction. The two phases are discussed in detail in the following subsections. Prior to performing the preliminary work, all equipment within the well (i.e. pumps, tubing, etc.) will be removed and disposed of accordingly.

3.1 Future Phase III Liner System and Depth to Cement Grout

A special consideration of this Work Plan is the fact that the decommissioned wells will reside within an area slated for future lined module construction, as part of Phase III. Because future

lined facilities will be constructed in this area, the wells cannot be grouted to the currently existing ground surface. Grouting to the surface cannot occur for two reasons: (i) to allow for easy excavation of the future landfill modules it is not desirable to have columns of grout within the excavation area, and (ii) a grout column, which is relatively stiff compared to adjacent native soil, in the proximity of the future landfill liner could result in stress concentrations in the liner that could pose a puncture risk to the bottom liner of the future modules. As such, this Work Plan proposes a dual destruction method. Specifically, GLA recommends that neat cement pressure grouting be used to decommission the wells from their bottom to 15 feet below the lowest estimated future liner subgrade elevation, and then use overdrilling to remove casing and well annulus from the top of the pressure grouted section to the surface followed by backfilling with hydrated bentonite. The removal of the well materials by overdrilling and the use of hydrated bentonite is intended to provide a seal that will be easily excavated during future lined module construction and is protective of the future liner elements.

To estimate the elevation for the top of decommission grouting, the geometry of the future Phase III modules were assumed to be similar to the geometry of the existing modules of Phase III. Additionally, GLA used some planning level CAD models/drawings provided by the County to extrapolate grades to the current Phase I area. Using the CAD model/drawing and referencing the geometry of the other Phase III modules, GLA has estimated the lowest liner elevation will be approximately 150 feet amsl, and will occur at the sumps for the future Phase III modules. Considering the lowest liner elevation of 150 feet amsl, the elevation of the top of decommission grout has been conservatively established as 135 feet amsl (15 feet below lowest estimated liner elevation), or about 65 feet bgs assuming a ground surface elevation of about 200 feet amsl.

3.2 Preliminary Work

3.2.1 Preparation for Well Destruction

Minimum requirements for preliminary work are described in the Water Code in Section 23 of Bulletin 74-81 and Section 19 of Bulletin 74-90. According to the Water Code, all wells to be decommissioned, no matter the selected method of destruction, shall be investigated to establish their general condition, details of construction, and whether there are any obstructions within the well that could inhibit the proper destruction of the well. To establish the condition of the wells, confirm the construction details discussed previously in Section 2.2 of this Work Plan, establish groundwater levels at the time of well destruction, and to check for obstructions, all wells shall be sounded with an appropriate measuring device capable of reaching the bottom of the well casing and having measuring marks with an accuracy of at least 0.01 feet. If an obstruction is encountered, the obstruction will be removed and the well will be resounded to the bottom of the screen.

After sounding the wells and confirming no obstructions are present, the well will be cleaned by brushing to remove any material that may be adhered to the casing and to clean the screened interval to help ensure that the grout properly adheres to the well casing and ultimately seals the well. After brushing, the well will be bailed to remove any sediment or other debris that may be present at the base of the well. Cleaning of the well casing will not be required if the selected method of well destruction is by overdrilling alone.

3.2.2 Well Surveying

Because the wells are being decommissioned in an area where a future lined landfill module will be constructed, it is imperative to accurately document the location and current elevation of the wells before they are destroyed to help ensure the depth of casing removal is sufficient to limit the potential for a conflict between the future liner and well materials. Specifically, the well materials will be removed to a depth of 15 feet below the estimated lowest liner subgrade elevation. Good vertical control will help accurately establish the required depth of well removal and allow for the elevation of the top of well materials to remain in place to be documented for reference if needed during future module design.

Accordingly, prior to well destruction the existing wells will be surveyed by a California-licensed surveyor to provide current and accurate elevation and location information. Information to be surveyed at each well will include: (i) horizontal well coordinates in CA State Plane (CCS83, Zone 4, US Survey Feet), latitude and longitude (NAD83), and local AADS ground system (no projection, no datum, US Survey Feet); and (ii) ground surface elevation (NGVD29). Horizontal coordinates will be surveyed to the nearest 0.1 foot and elevations will be surveyed to the closest 0.01 foot.

The site basis of coordinates is the north ¼ corner of Section 5, Township 15 south, Range 17 east Mount Diablo Base and Meridian (MDBM) (held at 9999.60 north, 10000.16 east), and the northwest corner of Section 4, Township 15 south, Range 17 east MDBM (held at 10032.12 north, 12638.64 east). The basis of vertical control is Fresno County Benchmark LH 17A, identified as a chiseled square on a concrete fuel pump pad located at the entrance of the AADS (NAGVD29 elevation 182.492 feet).

3.3 Well Destruction

After completion of preliminary work items, the wells will be destroyed by either a two-part process of pressure grouting and overdrilling, or by simply overdrilling the entire well. Both methods are designed to protect the liner of future landfill modules that will be part of Phase III at the AADS.

Specifically, the wells will be sealed via grouting from a depth of 15 feet below the lowest estimated future liner subgrade elevation to the bottom of the well, and by using a bentonite clay mixture from the surface to the top of the pressure grouted section. For the purposes of developing the well destruction method, it was assumed that all wells meet the requirements of the Water Code Bulletin 74-81, Section 23(B)(1), Bulletin 74-90, Section 19(A)(2)(a), and the EHD Requirements for Maintaining An Inactive Well. The well destruction process is described in more detail in the following subsections, and a detail of the well decommissioning process is provided as Figure 3.

3.3.1 Pressure Grouting

Prior to pressure grouting operations, the well will be perforated through its gravel pack interval (100 to 140 feet bgs). After perforating the well casing, the well will be grouted by means of a tremie extended to just above the bottom of the well casing, and neat cement grout mixed at 6 gallons of water per (1) 94-pound sack of cement, will be pumped into the casing. The grout will be placed until it has reached an elevation equivalent to 15 feet below the lowest estimated liner subgrade (approximately 135 feet amsl) for the future Phase III modules. Upon reaching the desired elevation, the tremie pipe will be removed, and the casing will be pressurized to 25 pounds per square inch and held at that pressure for a period of time sufficient to force the grout through the casing perforations and into the gravel pack and set. Setting of the grout should be able to be accomplished within 24 hours after placement, during which time pressure will be maintained. A pressure gauge with an appropriate accuracy for measuring the applied pressure will be fitted to the cap to allow for monitoring of the pressure during the set time.

3.3.2 Overdrilling

After the grout has set, the upper 3 feet of the well bore will be excavated, the casing will be cut and the upper portion of the monitoring well will be overdrilled using an appropriate drilling method. The selected drilling method will be capable of removing all well casing and annular materials to the top of the previously grouted casing. The materials removed from the original well bore will be collected and disposed of within the lined Phase II or Phase III waste management unit along with refuse excavated from Phase I. The overdrilled boring will then be backfilled via a tremie pipe extended to the bottom of the boring (top of the previously grouted casing), using hydrated bentonite. Bentonite will be mixed at a ratio of 1 gallon water to 2 pounds of bentonite, and will be hydrated prior to placement. The hydrated bentonite mixture will be placed from the bottom up in the overdrilled borehole until it overflows the boring into the base of the 3-foot deep surface excavation. The hydrated bentonite plug will be allowed to settle overnight, and will be topped off the following day. Upon completion of filling the overdrilled borehole and the 3-foot-deep excavation at the surface will be backfilled with native soils from the AADS.

3.3.3 Destruction Option

At the drilling contractor's discretion, wells may be overdrilled to total depth as the decommissioning procedure in lieu of the combined pressure grouting /overdrilling procedure. Grouting and bentonite clay mixture backfilling should be substantially consistent with the methods discussed in Sections 3.2.1 and 3.2.2 of this Work Plan, except grout will not need to be placed under pressure.

3.4 Quality Control/Assurance

The Contractor will be responsible for providing construction quality control during the well decommissioning work as described in the following subsections of this Work Plan. Quality control will be completed, or overseen, by an independent third party consultant experienced in this type of work and licensed by the state of California as either a professional civil engineer or geologist. The quality control firm will also be responsible for completing the required documentation described in section 3.5 of this Work Plan.

Quality assurance will be completed by GLA as part of the overall Phase I waste relocation construction quality assurance. The quality assurance for well decommissioning will involve reviewing quality control calculations and daily reports, periodically overseeing the well decommissioning work, and reviewing the quality control documentation prepared upon the completion of work.

3.4.1 Grout Volume

Prior to grouting the well casing, personnel overseeing the decommissioning process will calculate the volume of grout needed to grout the well casing to the desired elevation. The actual volume of grout used will then be compared to the calculated volume. If the actual volume of grout used is less than the calculated volume, the well will be considered to have grout bridging, and the entire well will be overdrilled as soon as possible to total depth to remove bridged grout, casing, and annular materials. The resulting borehole will be backfilled from the bottom to 15 feet below the lowest estimated future liner subgrade elevation (approximately 135 feet amsl) using neat cement grout. Grout will be allowed to set prior to bentonite placement. Figure 3 shows a detail of fully overdrilled well destruction.

If the contractor chooses to decommission wells by overdrilling alone, grout volumes will still be calculated for comparison to actual quantity used. If a lesser amount of grout is used, the grouted portion of the overdrill boring will be re-drilled to remove the bridged grout and will then be re-grouted from the bottom up.

3.4.2 Overdrill Observations

During the overdrilling operations, the personnel overseeing the decommissioning process shall continuously observe the drilling returns for evidence of well and annulus destruction. Specifically, the returns should be observed for pieces of PVC casing and chips of hardened cement derived from the well annulus. Additionally, the drilling returns should be observed for excess formational materials that may be the result of the drill tooling leaving the original well bore. Should a lack of well materials or an excess of formational materials be observed in the drilling returns, the driller will be notified immediately. Upon notification, the driller will attempt to re-enter the existing well bore and properly destroy the well.

3.4.3 Hydrated Bentonite Volume

After well overdrilling has been completed, the hydrated bentonite volumes will be calculated for comparison to actual quantities used, similar to the procedure employed prior to grout placement. Any suspected or known bridging will be corrected as soon as practical by re-drilling the bentonite section to top of grout and starting hydrated bentonite placement again from the bottom up.

Hydrated bentonite should be placed until it overflows the borehole into the 3-foot-deep excavation at the surface. Bentonite should be allowed to settle overnight, and then topped off.

3.5 Documentation

At the completion of the work the Contractor's quality control consultant shall prepare final boring and well completion logs and include them in a Monitoring Well Decommissioning Report containing, at a minimum:

- General information including: the purpose of the well decommissioning program, number of wells decommissioned, and site map showing the location of the decommissioned wells and all other remaining wells, roads, buildings, etc.
- Drilling details consisting of well decommissioning logs (copies of driller's DWR logs and geologist/engineer's logs) and a narrative of the drilling process.
- Calculations of required grout and hydrated bentonite volumes.
- Well destruction details including quantity and type of materials actually used along with any deviations from the Work Plan requirements presented herein.
- Well survey information for each well that was decommissioned. Well survey information will be presented in both the California State Plane, 1983 datum, and in the site coordinate system.
- County issued permits.
- Registered engineer or licensed surveyor's report and field notes.
- Engineer or geologist field notes from well destruction observations.

The Monitoring Well Decommissioning Report will be signed and stamped by a California licensed professional geologist or civil engineer, and submitted to GLA and the County. The report will be uploaded to GeoTracker upon the request of the RWQCB by the CQA firm after has been reviewed and approved by the GLA and the County.

4.0 SCHEDULE

Waste removal operations at the AADS Phase I is tentatively scheduled for the second quarter of 2020. The duration of the waste removal project is currently estimated to be about 200 days. Prior to, or during, the course of the Phase I waste removal project the existing wells will be abandoned. It is currently anticipated that well decommissioning will occur within the second or third quarter of 2020.

5.0 REFERENCES

Babcock, James (2017). "Corrective Action Program Review Report – 1st Semi-Annual 2017" for the American Avenue Disposal Sites Kerman. California. July 24.

Central Valley Regional Water Quality Control Board (2012). "Waste Discharge Requirements for American Avenue Municipal Solid Waste Landfill." June 8.

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Fresno County (No Date). "Requirements for Maintaining an Active Well".

Fresno County (Current Version, No Date). "Well Destruction Requirements".

Soma Environmental Engineering (2017). "Semi Annual Monitoring Report First Half 2017", August 15.

6.0 CERTIFICATION

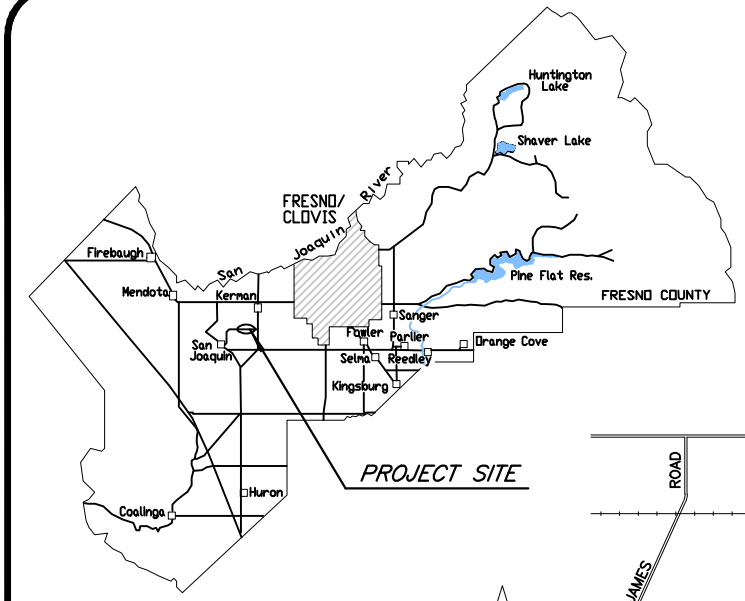
This Work Plan was prepared by Geo-Logic Associates under the direction of the undersigned preparer. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Prepared by:

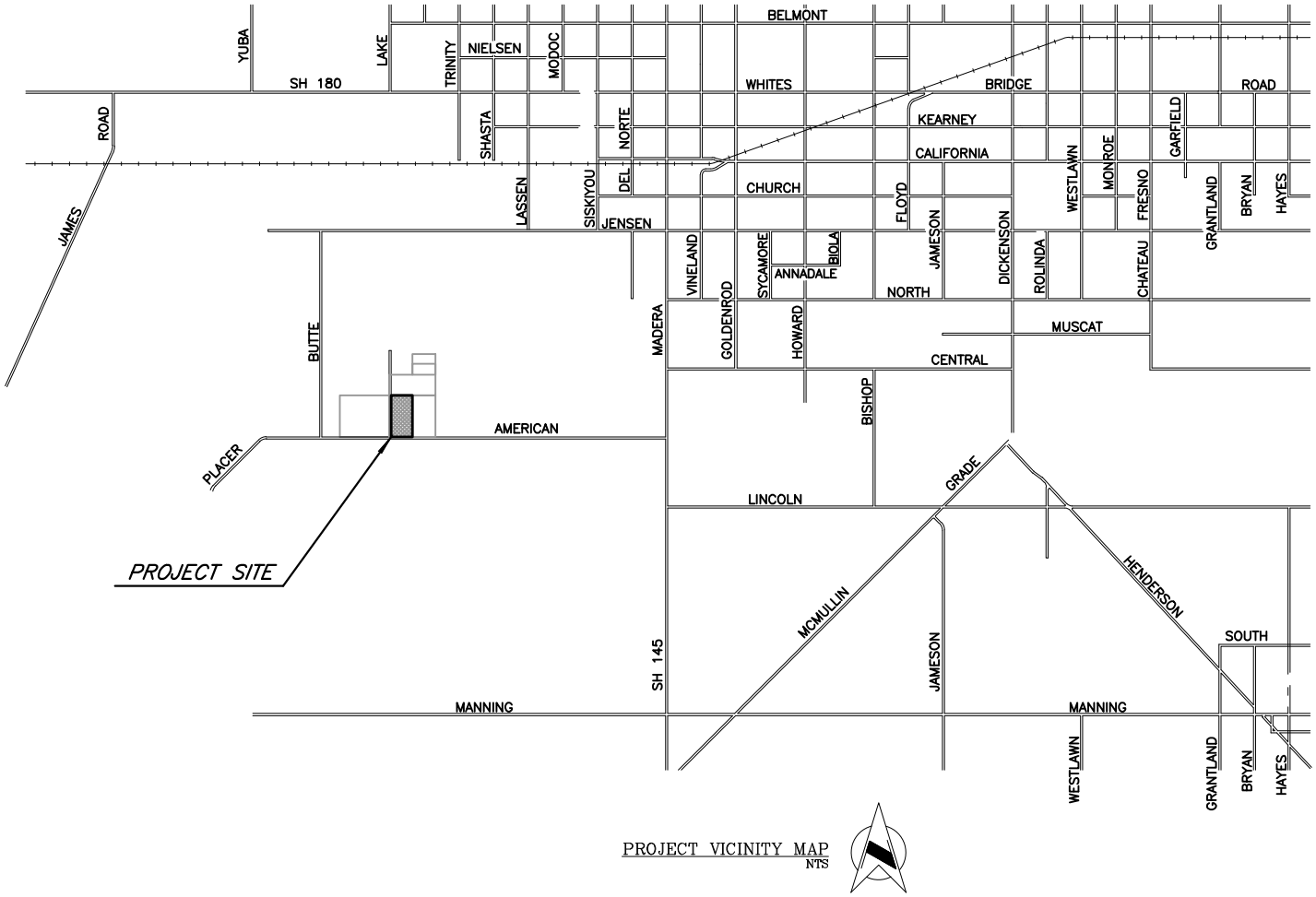
_____

Sean Flores, PE (C83784), PG (9422)
Geo-Logic Associates
Project Engineer

FIGURES



PROJECT LOCATION MAP
NTS



PROJECT VICINITY MAP
NTS

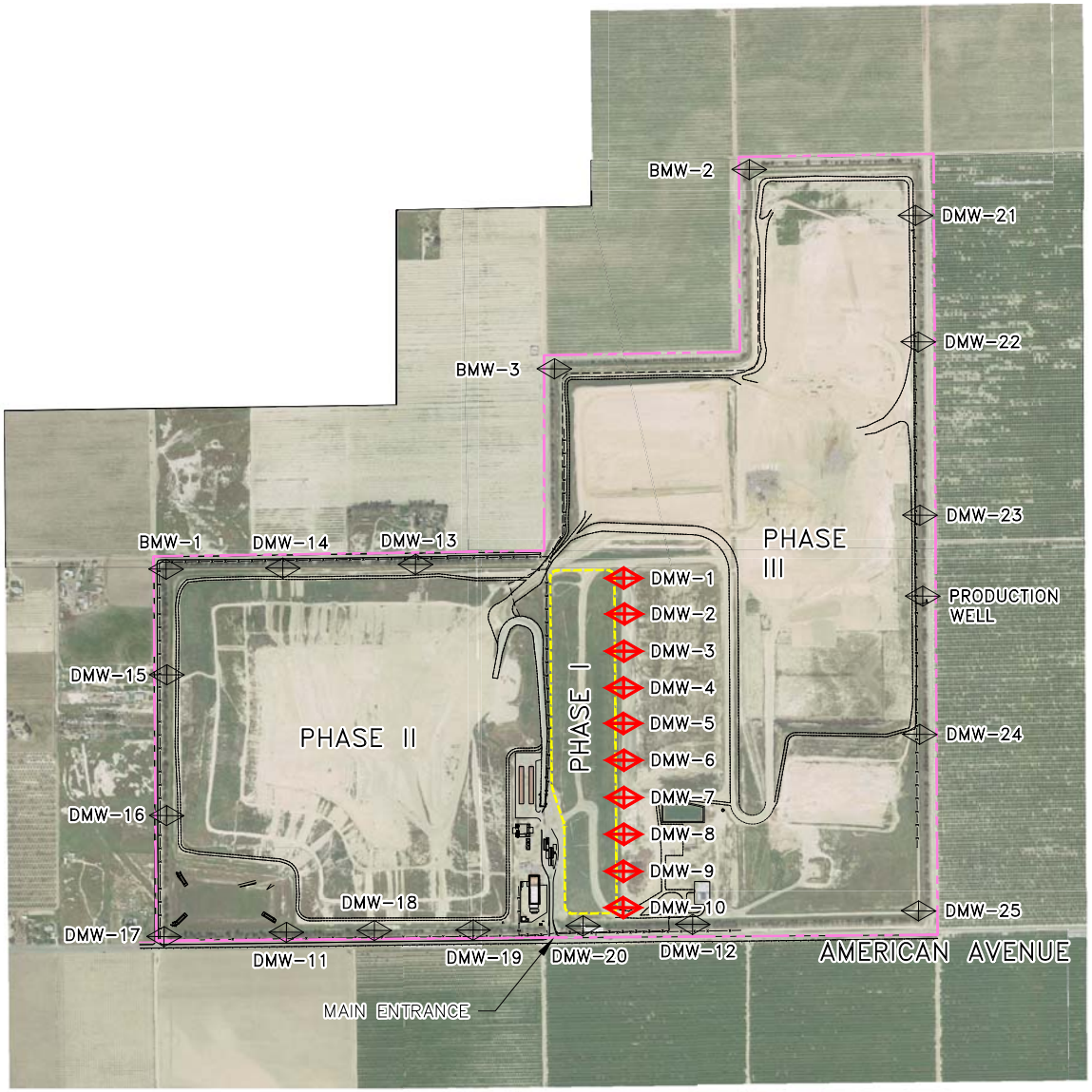
		DATE
DESIGNED	SRF	09/26/17
DRAWN	SRF	09/26/17
CHECKED	BMY	10/10/17

AMERICAN AVENUE DISPOSAL SITE PHASE I GROUNDWATER MONITORING WELL DECOMMISSIONING WORK PLAN

DEPARTMENT OF PUBLIC WORKS AND PLANNING

FIGURE 1
SITE LOCATION AND VICINTY MAP

LOCATION: N:\American Ave_Fresno, County of\2016.A086_American Ave_Clean Closure\Task 4 Clean Closure Work Plan\CAD\Working Drawings\CCWP Figures\Well Decomm WP Figures\FIG1_SITE_LOC_VICINITY.dwg DATE: 10/12/2017 PLOT SCALE: 1:1 PLOTTED BY: SFLORES



LEGEND

- APPROXIMATE LIMITS OF PHASE I
- CHAIN-LINK FENCE
- EDGE OF UNPAVED ROAD
- ELECTRICAL LINE (BURIED)
- PHASE I GROUNDWATER MONITORING WELL TO BE DECOMMISSIONED
- APPROXIMATE LOCATION OF EXISTING GROUNDWATER WELL
- PROPERTY LIMITS OF AADS

		DATE
DESIGNED	SRF	09/26/17
DRAWN	SRF	09/26/17
CHECKED	BMY	10/10/17

LINE IS 2-INCHES WHEN PRINTED TO SCALE

0 400' 800'

SCALE (FEET)

AMERICAN AVENUE DISPOSAL SITE
PHASE I GROUNDWATER MONITORING WELL DECOMMISSIONING WORK PLAN

DEPARTMENT OF PUBLIC WORKS AND PLANNING

FIGURE 2
SITE PLAN

LOCATION: N:\American Ave_Fresno, County of\2016.A086_American Ave_Clean Closure\Task 4 Clean Closure Work Plan\CAD\Working Drawings\CCWP Figures\Well Decomm WP Figures\Fig2_SITE_MAP.dwg DATE: 10/12/2017 PLOT SCALE: 1:1
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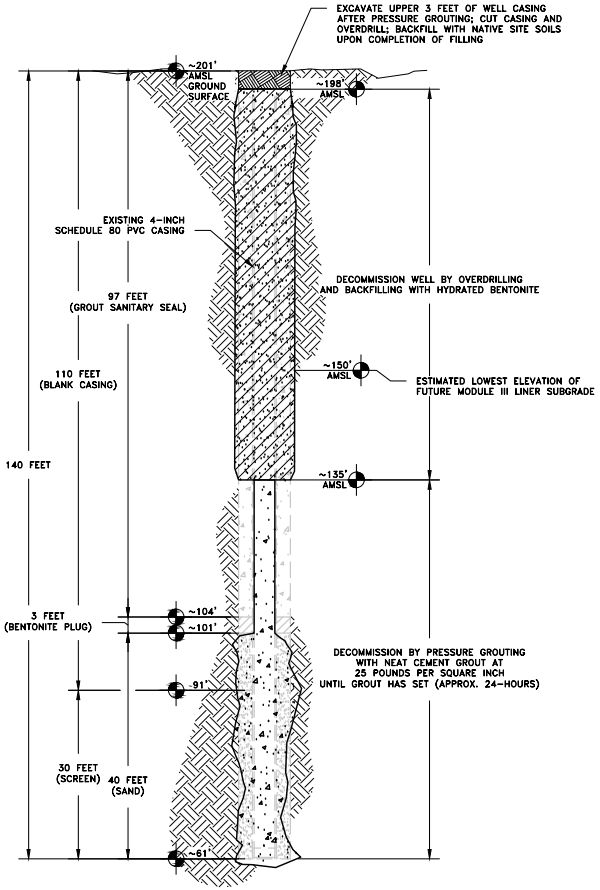
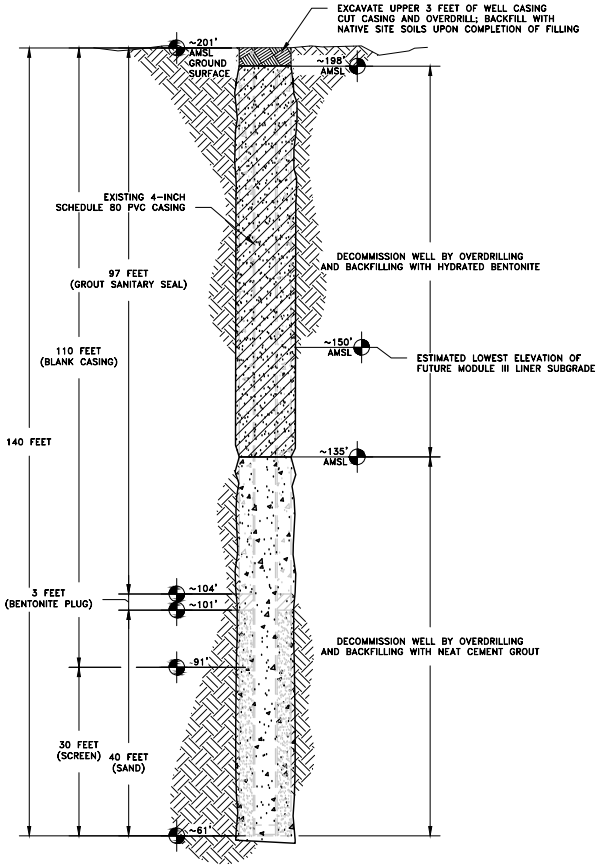


TYPICAL GROUNDWATER WELL DECOMMISSIONING

NTS



BRIDGED GROUNDWATER WELL DECOMMISSIONING

NTS

NOTES

1. DECOMMISSIONED PHASE I GROUNDWATER MONITORING WELL MATERIALS WILL BE DISPOSED OF WITHIN THE LINED PHASE II OF AADS.
2. GROUNDWATER MONITORING WELLS WILL BE DECOMMISSIONED BY REMOVING THE WELL CASING AND ANNULAR MATERIALS TO AN ELEVATION 15 FEET BELOW THE LOWEST ANTICIPATED FUTURE MODULE LINER ELEVATION AND WILL BE DECOMMISSIONED BY PERFORATION AND PRESSURE GROUTING AT DEEPER ELEVATIONS.
3. ESTIMATED LOWEST FUTURE PHASE III LINER ELEVATION WAS EXSTIMATED BY GLA USING EXISTING PHASE III MODULE GEOMETRIES AND COUNTY SUPPLIED CAD DRAWING/MODEL FILES.
4. DECOMMISSIONED WELL BACKFILL WILL BE NEAT CEMENT GROUT UP TO 15 FEET BELOW THE LOWEST ANTICIPATED LINER ELEVATION OF FUTURE PHASE III MODULES AND BY BENTONITE ABOVE THAT ELEVATION.
5. GROUT TO BE MIXED AT 1-94 LB SACK OF CEMENT TO 6 GALLONS OF WATER.
6. MIX BENTONITE AT 1-GALLON OF WATER TO 2 LB OF BENTONITE. BENTOINTE TO BE HYDRATED PRIOR TO PLACEMENT.
7. THE SURFACE ELEVATION LISTED IS FOR ILLUSTRATIVE PURPOSES, AND IS APPROXIMATE. THE ACTUAL ELEVATIONS FOR DECOMMISSIONING WORK TO BE BASED ON SURVEYED INFORMATION AT THE TIME OF WELL DESTRUCTION.
8. WELLS TO BE PERFORATED FROM 100 TO 140 FEET BELOW GROUND SURFACE (SAND INTERVAL) PRIOR TO PRESSURE GROUTING.
9. PLACE GROUT AND BENTOINTE VIA TREMIE FROM THE BOTTOM-UP.
10. IF AMOUNT OF ACTUAL GROUT USED IN PRESSURE GROUTING IS LESS THAN THE CALCULATED VOLUME, THE WELL SHALL BE DECOMMISSIONED BY OVERDRILLING TO TOTAL DEPTH TO REMOVE ALL BRIDGED GROUT, WELL CASING, AND ANNULUS MATERIALS, SEE "BRIDGED GROUNDWATER WELL DECOMMISSIONING" DETAIL THIS SHEET.
11. THE DRILLER CONTRACTOR MAY OPT TO DECOMMISSION WELLS BY OVERDRILLING IN LIEU OF USING THE COMBINATION PRESSURE GROUT/OVERDRILLING METHOD AT THEIR DISCRETION. IF OVERDRILLING IS SELECTED AS THE METHOD OF WELL DECOMMISSIONING, IT SHALL BE COMPLETED PER THE "BRIDGED GROUNDWATER WELL DECOMMISSIONING" DETAIL THIS SHEET.

LEGEND

- EXISTING NEAT-CEMENT GROUT SANITARY SEAL
- EXISTING BENTONITE PLUG
- EXISTING GRAVEL PACK
- PROPOSED SOIL BACKFILL OVER DECOMMISSIONED WELL
- PROPOSED HYDRATED BENTONITE BACKFILL OF DECOMMISSIONED WELL
- PROPOSED NEAT-CEMENT GROUT BACKFILL OF DECOMMISSIONED WELL

		DATE
DESIGNED	SRF	09/26/17
DRAWN	SRF	09/26/17
CHECKED	BMY	10/10/17

LINE IS 2-INCHES WHEN PRINTED TO SCALE

0 100 200

SCALE (FEET)

AMERICAN AVENUE DISPOSAL SITE
PHASE I GROUNDWATER MONITORING WELL
DECOMMISSIONING WORK PLAN

DEPARTMENT OF PUBLIC WORKS AND PLANNING

FIGURE 3
PHASE I WELL DESTRUCTION DETAILS

APPENDIX A
DWR WATER WELL DRILLERS REPORTS
(DMW-1 THROUGH DMW-10)

ORIGINAL

File with DWR DMW #1

Notice of Intent No. ______

Permit No. or Date ______

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

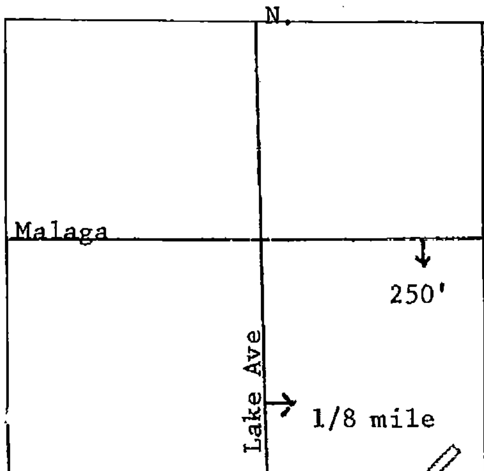
No. 203122

State Well No. 19/17-33

Other Well No. ______

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number ______
Well address if different from above ______
Township ______ Range ______ Section ______
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake Ave, 250' south of Malaga



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 100 to 140 ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch 80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97 Cement 97 - 100 Bentonite

(10) WATER LEVELS:
Depth of first water, if known 100 ft.
Standing level after well completion 100 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 ______ ft. At end of test ______ ft
Discharge ______ gal/min after ______ hours Water temperature ______
Chemical analysis made? Yes ☐ No ☐ If yes, by whom? ______
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	5	Clay
5	15	Sandy Clay
15	26	Clay
26	30	Sand
30	60	Clay
60	65	Sand
65	92	Clay
92	130	Sand
130	140	Clay

Work started 7-7 1987 Completed 7-7 1987

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

SIGNED ______ (Well Driller)

NAME Arthur & Orum Well Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave
City Fresno, Ca. Zip 93725
License No. 361319 Date of this report 7-7-87

CONFIDENTIAL NOT FOR PUBLIC USE WATER CODE SEC. 13752

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

ORIGINAL

File with DWR DMW #2

Notice of Intent No.

Permit No. or Date

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

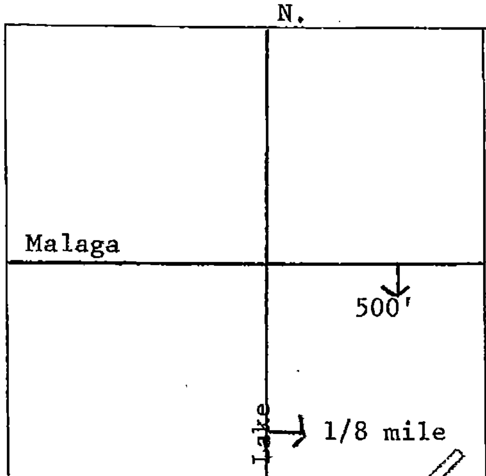
No. 203123

State Well No. 14/17-33

Other Well No.

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number
Well address if different from above
Township Range Section
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake, 500' south of Malaga



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 100 to 140 ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch 80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97 cement 97 - 100 Bentonite

(10) WATER LEVELS:
Depth of first water, if known 100' ft.
Standing level after well completion 100' 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 ft. At end of test ft
Discharge gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	29	Clay
29	36	Sand
36	58	Clay
58	66	Sand
66	90	Clay
90	99	Sand
99	103	Clay
103	122	Sand
122	140	Clay

Work started 7-7 1987 Completed 7-7 1987

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

SIGNED
(Well Driller)

NAME Arthur & Orum WEll Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave
City Fresno, Ca. Zip 93725
License No 361919 Date of this report 7-7-87

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

ORIGINAL

File with DWR DMW #3

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 203121

State Well No. 14/17-33

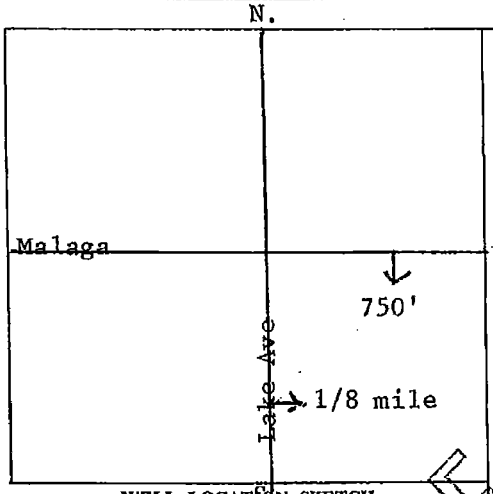
Other Well No.

Notice of Intent No.

Permit No. or Date

(1) OWNER:
Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number
Well address if different from above
Township Range Section
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake, 750' south of Malaga



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 100 to 140 ft.

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

From ft.	To ft.	Dia. in.	Gage or Wall
0	140	4	Sch 80

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

From ft.	To ft.	Slot size
110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97 Cement 97 - 100 Bentonite

(10) WATER LEVELS:
Depth of first water, if known 100 ft.
Standing level after well completion 100 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 ft. At end of test ft
Discharge gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG:
Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	18	Sand
18	21	Clay
21	24	Sand
24	30	Clay
30	35	Sand
35	56	Clay
56	71	Sand
71	80	Clay
80	88	Sand
88	119	Clay
119	134	Sand
134	140	Clay

Work started 7-6 19 87 Completed 7-6 19 87

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

SIGNED (Well Driller)
NAME Arthur & Orum WEll Drilling Co., Inc. (Person, firm, or corporation) (Typed or printed)
Address 1262 E. Conejo Ave.
City Fresno, Ca. Zip 93725
License No. 361319 Date of this report 7-6-87

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

ORIGINAL

File with DWR DMW #4

Notice of Intent No. ______

L. Permit No. or Date ______

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

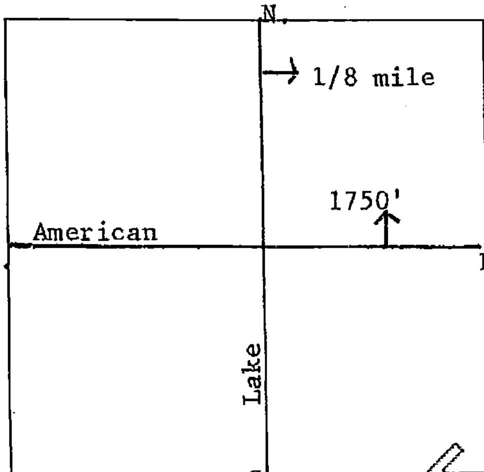
No. 203120

State Well No. 14/17-33

Other Well No. ______

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number ______
Well address if different from above ______
Township ______ Range ______ Section ______
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake, 1,750' north of American



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 ☒ Monitoring

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 100 to 140 ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch 80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97' cement 97 - 100 Bentonite

(10) WATER LEVELS:
Depth of first water, if known 110 ft.
Standing level after well completion 110 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 ______ ft. At end of test ______ ft
Discharge ______ gal/min. after ______ hours Water temperature ______
Chemical analysis made? Yes ☐ No ☐ If yes, by whom? ______
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	6	Clay
6	35	Sand
35	44	Clay
44	46	Sand
46	58	Clay
58	62	Sand
62	67	Clay
67	73	Sand
73	81	Clay
81	90	Sand
90	129	Clay
129	135	Sand
135	140	Clay

Work started 7-3 19 87 Completed 7-6 19 87

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

SIGNED ______
(Well Driller)

NAME Arthur & Orum Well Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)

Address 3262 E. Conejo Ave
City Fresno, Ca Zip 93725
License No. 361319 Date of this report 7-6-87

ORIGINAL

File with DWR DMW #5

Notice of Intent No.

L Permit No. or Date

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

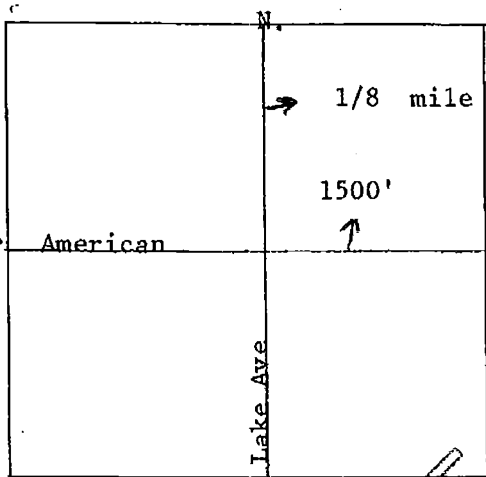
No. 203116

State Well No. 14/17-33

Other Well No.

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. 93721 Zip

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number
Well address if different from above
Township Range Section
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake ave, 1,500' north of American



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 97 to 140' ft.

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

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

Casing From ft.	To ft.	Dia. in.	Gage or Wall	Perforations From ft.	To ft.	Slot size
0	140	4	Sch 80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97' Cement 97' - 100' Bentonite

(10) WATER LEVELS:
Depth of first water, if known 110 ft.
Standing level after well completion 110 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 ft. At end of test ft
Discharge gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	19	Clay
19	36	Sand
36	61	Clay
61	89	Sand
89	104	Clay
104	113	Sand
113	140	Clay

Work started 7-2 1987 Completed 7-2 1987

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

SIGNED
(Well Driller)

NAME Arthur & Orum Well Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave.
City Fresno, Ca Zip 93725
License No. 361319 Date of this report 7-2-87

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

ORIGINAL

File with DWR DMW #6

Notice of Intent No.

Permit No. or Date

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

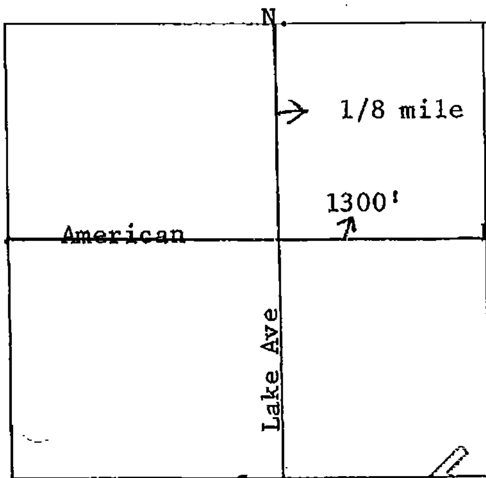
No. 203117

State Well No. 14/17-33

Other Well No.

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number
Well address if different from above
Township Range Section
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake Ave, 1,300' north of American



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 97' to 140' ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch 80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97' Cement 97' - 100' Bentonite

(10) WATER LEVELS:
Depth of first water, if known 110' ft.
Standing level after well completion 110' 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 ft. At end of test ft
Discharge gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	29	Clay
29	37	Sand
37	53	Clay
53	57	Sandy Clay
57	65	Clay
65	70	Sand
70	74	Clay
74	78	Sand
78	82	Clay
82	85	Sand
85	105	Clay
105	112	Sand
112	121	Clay
121	140	Sand

Work started 7-2 1987 Completed 7-2 1987

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

SIGNED
(Well Driller)

NAME Arthur & Orum WEll Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave
City Fresno, Ca Zip 93725
License No. 361319 Date of this report 7-2-87

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

ORIGINAL
File with DWR DMW #7

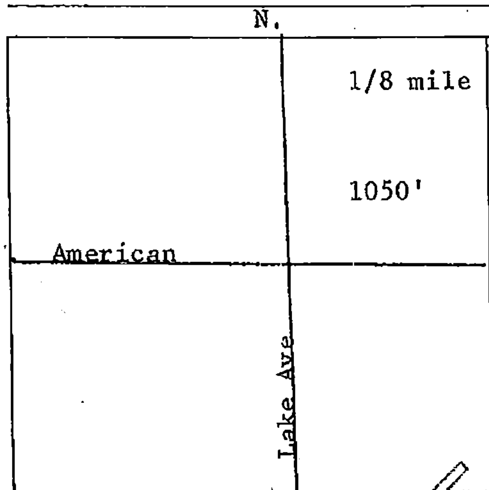
Notice of Intent No.
Local Permit No. or Date

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in
No. 203118
State Well No. 14/17-33
Other Well No.

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number
Well address if different from above
Township Range Section
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake Ave, 1,050' north of American



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 97' to 100 ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97' Cement 97' - 100' Bentonite

(10) WATER LEVELS:
Depth of first water, if known 90' ft.
Standing level after well completion 90' 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 ft. At end of test ft
Discharge gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	5	Top Soil
5	14	Sand
14	22	Clay
22	37	Sand
37	47	Clay
47	57	Sandy Clay
57	65	Clay
65	72	Sand
72	89	Clay
89	92	Sand
92	140	Clay

Work started 7-1 1987 Completed 7-1 1987

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

SIGNED
(Well Driller)
NAME Arthur & Orum WEll Drillmng Co. Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave
City Fresno, Ca. Zip 93725
License No. 361319 Date of this report 7-1-87

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

ORIGINAL

File with DWR DMW #8

Notice of Intent No. ____

Local Permit No. or Date ____

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

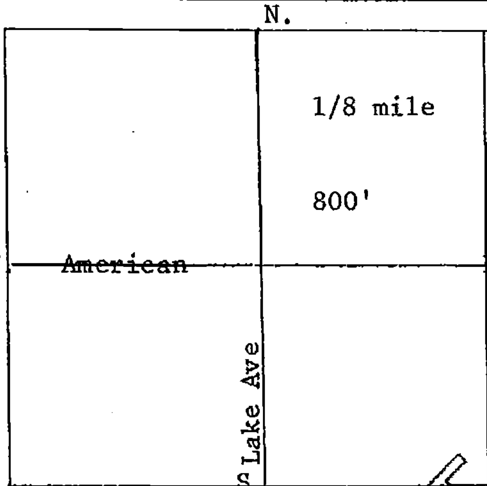
No. 203119

State Well No. 14/17-33

Other Well No. ____

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number ____
Well address if different from above ____
Township ____ Range ____ Section ____
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake Ave, 800' north of American



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 Monitoring ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 12
Diameter of bore 10"
Packed from 97' to 140 ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch 80	110	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0- 97' Cement 97' - 100' Bentonite

(10) WATER LEVELS:
Depth of first water, if known 90' ft.
Standing level after well completion 90' 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 ____ ft. At end of test ____ ft
Discharge ____ gal/min after ____ hours Water temperature ____
Chemical analysis made? Yes ☐ No ☐ If yes, by whom? ____
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	19	Clay
19	37	Sand
37	44	Clay, Sandy
44	126	Clay
126	132	Sand
132	135	Clay
135	140	Sandy

Work started 7-1 1987 Completed 7-1 1987

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

SIGNED ____
(Well Driller)

NAME Arthur & Orum Well Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave
City Fresno, Ca. 93725 Zip ____
License No. 361319 Date of this report 7-1-87

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

ORIGINAL

File with DWR #9

Notice of Intent No.

Permit No. or Date

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

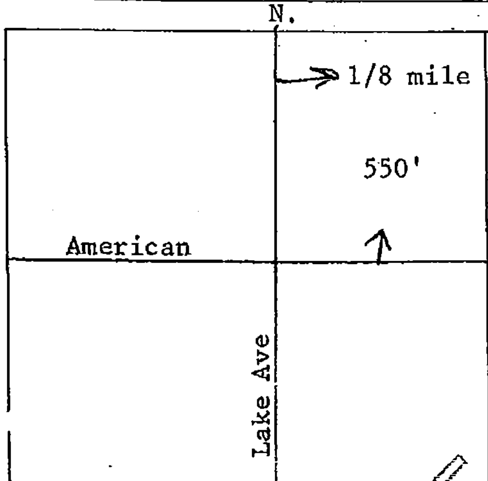
No. 203115

State Well No. 14/17-33

Other Well No.

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number
Well address if different from above
Township Range Section
Distance from cities, roads, railroads, fences, etc. 1/8 mile east of Lake, 550' north of American



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 Monitering ☒

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 97' to 140' ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4	Sch 80	100	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97' cement 97- 100' Bentonite

(10) WATER LEVELS:
Depth of first water, if known 90' ft.
Standing level after well completion 90' 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 ft. At end of test ft
Discharge gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	5	Sandy Clay
5	25	Clay
25	39	Sand
39	41	Clay
41	64	Sand
64	95	Clay
95	97	Sand & Clay
97	123	Clay
123	127	Sand
127	140	CLay

Work started 6-30 1987 Completed 6-30 1987

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

SIGNED
(Well Driller)
NAME Arthur & Orum Well Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave.
City Fresno, Ca. Zip 93725
License No. 361319 Date of this report 6-30-87

ORIGINAL

File with DWR DMW #10

Notice of Intent No. ____

Permit No. or Date ____

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

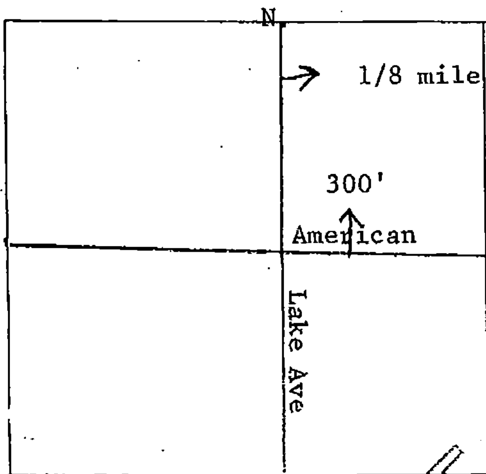
No. 203114

State Well No. 14/17-33

Other Well No. ____

(1) OWNER: Name American Ave Disposal Site
Address 18950 W. American Ave
City Fresno, Ca. Zip 93721

(2) LOCATION OF WELL (See instructions):
County Fresno Owner's Well Number ____
Well address if different from above ____
Township ____ Range ____ Section ____
Distance from cities, roads, railroads, fences, etc. 1/8 mile west of Lake Ave 300' ~~xxxxx~~ north of American



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 ☒ Monitoring

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 8 X 16
Diameter of bore 10"
Packed from 97' to 140' ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	140	4"	Sch 80	100	140	.045

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
Were strata sealed against pollution? Yes ☒ No ☐ Interval 100 ft.
Method of sealing 0 - 97' cement 97' - 100' Bentonite

(10) WATER LEVELS:
Depth of first water, if known 90' ft.
Standing level after well completion 90' 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 ____ ft. At end of test ____ ft
Discharge ____ gal/min after ____ hours Water temperature ____
Chemical analysis made? Yes ☐ No ☐ If yes, by whom? ____
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 140 ft. Depth of completed well 140 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Top Soil
3	10	Clay
10	16	Sand
16	45	Clay
45	69	Sand
69	84	Clay
84	90	Sand
90	140	Clay

Work started 6-30 1987 Completed 6-30 1987

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

SIGNED ____ (Well Driller)

NAME Arthur & Orum Well Drilling Co., Inc.
(Person, firm, or corporation) (Typed or printed)
Address 3262 E. Conejo Ave
City Fresno, Ca. Zip 93725
License No. 361319 Date of this report 6-30-87

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

APPENDIX B
EXAMPLE WELL DESTRUCTION PERMIT APPLICATION

EXAMPLE ONLY

DEPARTMENT OF PUBLIC HEALTH - ENVIRONMENTAL HEALTH DIVISION

P.O. Box 11867 Zip 93775, 1221 Fulton Mall, Fresno, California 93721
Telephone: (559) 600-3357 Fax: (559) 600-7629 Website: www.fcdph.org/water

PERMIT TO CONSTRUCT, DEEPEN, DESTROY, RECONDITION, OR REPAIR A WELL

Application Date _____ Estimated Start Date _____

T 14S R 17E S 33

APN 020 - 052 - 09
(ex### -### -##)

Contractor _____

License # _____

Phone _____

FAX _____

OFFICE USE ONLY

Well Permit# _____ FA# _____

Specialist _____ CT _____

☐ Corcoran Clay Depth _____ Ft
(see Special Corcoran Clay Annular Seal Requirements on attachment)

☐ Well Location in Flood Zone. (Extend Casing above known flood level; Flood Elevation Certificate required to be submitted to the Fresno Co. Public Works. Dept. prior to approval of the well electrical permit.)

Approved _____ Date _____ Seal Inspection _____ Date _____

Final Inspection _____ Date _____ Supervisor _____

Job Address/Location 18950 West American Ave, Kerman, CA 93608 Parcel Size 10 ACRES

Owner Name County of Fresno Owner Phone 559.600.4078

Owner Address 2220 Tulare Street #600 City Fresno State CA Zip 93721

Type of Work
- ☐ New Well
- ☐ Replacement Well
- ☐ Reconstruction/Deepening
- ☐ Test Hole
- ☒ Destruction

Type of Well
- ☐ Casing Driven
- ☐ Cable Tool
- ☐ Hardrock
- ☐ Auger
- ☐ Direct Rotary
- ☐ Reverse Rotary

Intended Use
- ☐ Domestic Private
- ☐ Domestic Public
- ☐ Agricultural
- ☐ Industrial
- ☐ Cathodic
- ☐ Test Hole
- ☐ Monitoring
- ☐ Other

Well Construction
Well Casing Material _____
Well Casing Diameter _____ in
Well Casing Gauge _____
Conductor Casing Material _____
Conductor Casing Diameter _____ in
Conductor Casing Depth _____ Ft
Annular Seal Depth _____ Ft
Borehole Diameter _____ in
Gravel Pack ☐ Yes ☐ No

Well Destruction
Type ☒ Gravel Pack ☐ Open Bottom ☐ Uncased ☐ Other _____
Well Diameter 4 In Total Depth 140 Ft
Depth to Water ~120 Ft
Casing to be Perforated 100 Ft to 140 Ft
☒ Casing cut off 3 Ft Below Grade (6ft max allowed)
☐ Oil lubricated pump **(Any oil in the well shall be removed and properly disposed of prior to destruction)**

Sealing Material/Seal Placement Method
☒ Neat Cement ☐ Sand Cement ☐ Concrete
☒ Bentonite – Product Name _____
☒ Pumped ☐ Free Fall **(allowed only when the interval to be sealed is dry and less than 30 Ft depth)**

Setbacks ☐ All setbacks exceed 300 Feet ☒ Other Wells 250+ Ft
☐ Leach Lines _____ Ft ☐ Septic Tank _____ Ft ☐ Cesspool _____ Ft ☐ Seepage Pits _____ Ft
☐ Sewer Lines _____ Ft ☐ Animal/Fowl Enclosure _____ Ft ☐ Designated Sewage Replacement Area _____ Ft
☐ Flood Control Basins _____ Ft ☐ Waste Water Disposal Ponds _____ Ft ☐ Lakes/Streams _____ Ft

FEE ☐ **$605** (Domestic/Agricultural/ Cathodic/Test Hole **PE4650**, Public/Industrial **PE4652**) ☒ **$407** (Well Destruction **PE4651**)
☒ **No Charge** (Monitoring Well/Soil Boring **PE4653**)
PAYMENT METHOD ☐ Cash ☐ Check ☐ Credit Card (Authorization on file with Dept. of Public Health, Env. Health Division)

I hereby certify that the information described herein is correct. I understand that all work is to be done in accordance with the California Well Standards Ordinance and the conditions of this permit application, including any conditions which are added by the Environmental Health Division upon review of this application and issuance of the permit. I certify that I have a current C-57 Contractor's License and, if I employ workers, a current certificate of Workers' Compensation Insurance. I further understand that any permit issued pursuant to this application is subject to such further conditions as may be deemed necessary to ensure compliance with the Ordinance. **Note: This permit is non-transferable and is valid for 180 days.**

CONTRACTOR SIGNATURE: DATE:

OFFICE USE ONLY - ENVISION CLERICAL:

Account# _____ Invoice# _____

Entered By _____ Date _____

SPECIAL REQUIREMENTS: Faxed by _____

EXAMPLE ONLY

EXAMPLE ONLY

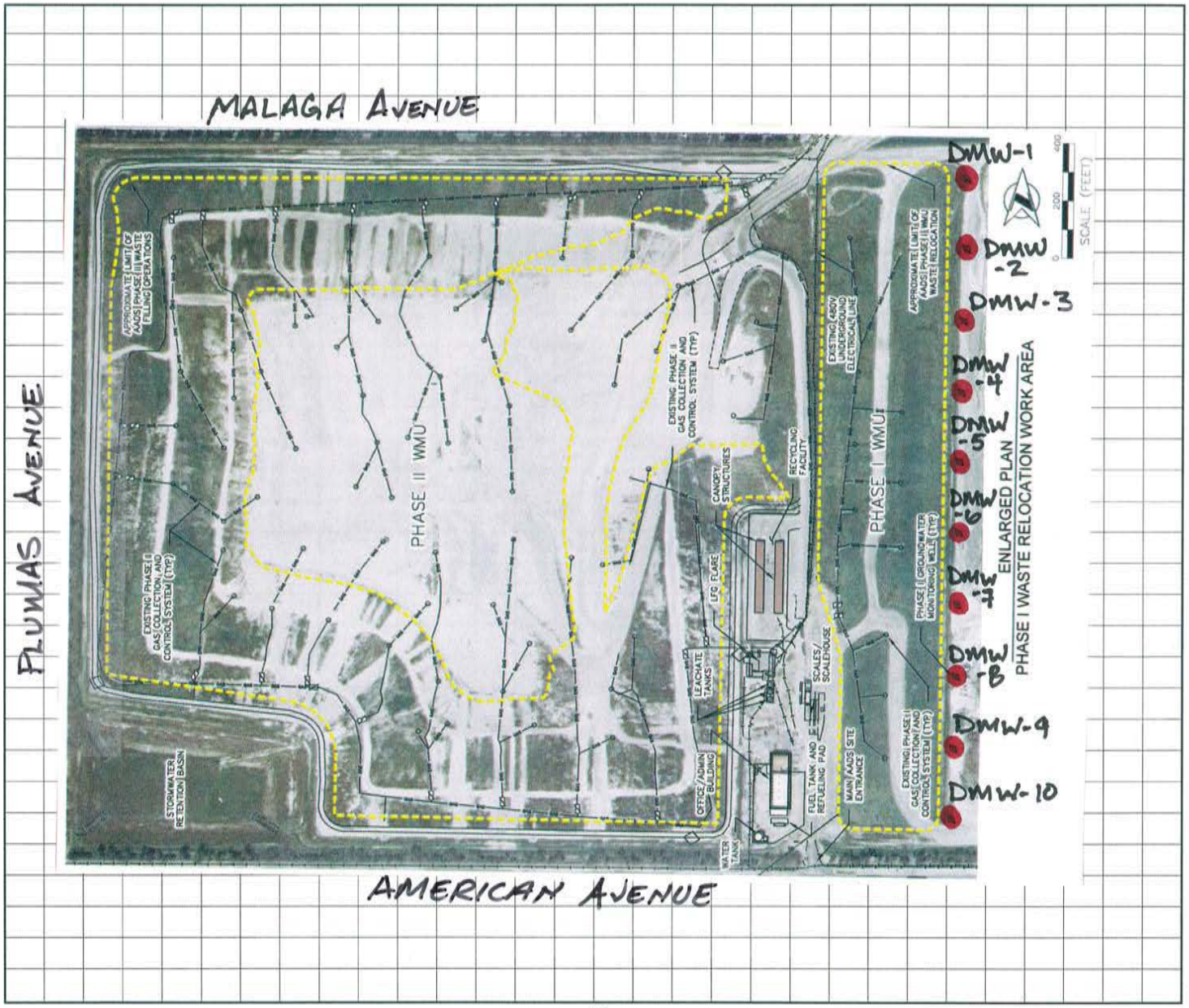
DEPARTMENT OF PUBLIC HEALTH - ENVIRONMENTAL HEALTH DIVISION
P.O. Box 11867 Zip 93775, 1221 Fulton Mall, Fresno, California 93721
Telephone: (559) 600-3357 Fax: (559) 600-7629 Website: www.fcdph.org/water

PLOT PLAN TO ACCOMPANY PERMIT TO CONSTRUCT, DEEPEN, DESTROY, RECONDITION, OR REPAIR A WELL

Note: This permit is non-transferable and is valid for 180 days

Job Address / Location: 18950 W. American Ave, Kerman, CA APN: 020 / 052 / 09 PERMIT # _____

Indicate distances in feet. Provide the names of streets or roads nearest to the property. Provide dimensions of the property and all existing or proposed structures. Provide locations of existing or proposed sewage disposal systems, including expansion or repair areas, within 250 feet of the new well. Provide locations of all other wells within 300 feet of the new well. Location information shall include all adjacent parcels, if within setbacks.



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EXAMPLE ONLY