

SECTION 33 29 00
MONITORING WELL ABANDONMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for the sealing and permanent destruction of abandoned monitoring wells.

1.02 REFERENCES

- A. The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
Nevada County Environmental Health Department (NCEHD)	Summary of Well Standards
ASTM C150	Standard Specification for Portland Cement
California Department of Water Resources (DWR)	California Well Standards, Combined Bulletins 74-81 and 74-90

1.03 SCOPE OF WORK

- A. The project consists of the permanent destruction and abandonment of seven groundwater monitoring wells, including one artesian monitoring well in accordance with the specifications herein set forth and the Groundwater Monitoring Well Destruction Workplan prepared by Hydrosience Engineers, Inc., dated August 7, 2024. Well construction details are contained in the Groundwater Monitoring Well Destruction Workplan. The Contractor shall utilize well destruction procedures that are compatible with the well conditions encountered, including the artesian well.
- B. The scope includes the application and fee for the well destruction permit from NCEHD and compliance with all NCEHD requirements for well destruction.
- C. The Contractor shall perform:
1. Obtaining the well destruction permit from NCEHD, and provide all submittals.
 2. Arrange for and provide all materials and labor required to dewater the artesian well and provide appropriate erosion and sediment controls for the work in accordance with the County's Standard Erosion and Sedimentation Control Plans: [Erosion-and-Sediment-Control-Plans-PDF](#). Up to 20 gpm of continuous water flow out of the well is assumed. Contractor shall report actual flow rate to County. The water shall be fully contained and redirected to the approved disposal location as directed by the County. A water pollution control plan shall be submitted and approved prior to proceeding with work.
 3. Remove existing wellhead seals.
 4. Well destruction activities, including removal of casings, filter packs, annular seals, casing perforating, and filling of existing well borehole.

5. Transport and disposal of all excess soils, spoils, and cuttings in conformance with Local, State, and Federal Regulations, including all required hauling and disposal permits and fees.
6. Restore well site surface.
7. Submit well completion report.

1.04 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming to the requirements of this Section shall be considered as included in the price paid for the various items of work, and no separate payment will be made therefore, and shall include all labor, materials, tools, equipment, and transportation, and for doing all the work involved, as specified herein and as directed by the County.

1.05 SUBMITTALS

- A. Submittals shall be per Article XVI of the Contract.
- B. Before well destruction and abandonment procedures are commenced, the Contractor shall obtain a well destruction permit from the Nevada County Environmental Health Department (NCEHD). The Contractor is also responsible for paying the permit fee. To that end, the Contractor shall submit plans, in accordance to Article XVI of the Contract, setting forth the details of the proposed method of destruction and abandonment. The plans shall include at least the following:
 1. Method of well casing removal.
 2. Method of well casing perforating.
 3. Method of placement of sealing materials.
 4. Sealing material: Type and volume
 5. Temporary cover plan and materials while sealing material sets.
- C. Contractor shall submit a water pollution control plan for erosion and sedimentation controls and dewatering of the artesian well for approval prior to proceeding with work.
- D. Contractor must be a licensed well driller in California.
 1. Current C-57 Water Well Drilling Contractor's License.
- E. Product Data Submittals per Article XVI of the Contract.
 1. Sealing material.
- F. The plan and permit shall be approved prior to commencing work.
- G. Submit copy of well completion report.

1.06 QUALITY ASSURANCE

- A. Inspections and Inspectors
 1. An authorized NCEHD well inspector must be on site upon the placement of sealing material, and may be on site for initial and final inspections. The Contractor must schedule the well inspection at least 24 hours prior to commencement of well destruction.

If the NCEHD permit conditions are more stringent than the conditions contained herein, the Contractor shall comply with the more stringent conditions.

2. The inspector will make an inspection of the well grouting.

1.07 COUNTY FURNISHED WORK

1. Access to the site and laydown areas shall be provided to the Contractor by the County.

PART 2 PRODUCTS

2.01 SEALING MATERIAL

- A. Acceptable sealing material is:
 1. 21 sack neat cement (four 94-pound bags/55-gallon drum)
- B. Native materials, organic materials, and used drilling mud shall not be used as sealing material.
- C. Water used to prepare sealing mixtures are to be potable.

PART 3 EXECUTION

3.01 GENERAL

- A. Contractor to prepare and submit a Well Destruction Application to the NCEHD and the County Representative with the approved well destruction and abandonment plan information.
- B. Contractor to prepare and submit dewatering plan for approval.
- C. Contractor to set up approved artesian well containment and dewatering system to the satisfaction of the Owner prior to the removal of the remaining pump and valve. The pump, valve, and appurtenances shall be hauled and disposed of by the Contractor.
- D. The Contractor shall furnish, operate, and maintain all machinery, and equipment to perform the well destruction and abandonment around the area of work so as not to cause injury to public or private property, or to cause a nuisance or menace to the public.
- E. Protect surrounding work area from damage.
- F. Monitor dewatering system during operation. Correct any failures promptly to avoid escape of water from the containment area.
- G. Upon completion of the well destruction and abandonment process, provide complete restoration of the site, including but not limited to all backfilling, regrading to match existing ground contours, and routine site restoration per Article XVIII of the Contract.
- H. Within 30 days of completion of Work, Contractor shall fully complete and submit DWR Form 188 – Well Completion Report.

3.02 WELL DESTRUCTION AND ABANDONMENT

- A. Monitoring wells 1 through 4 shall be destroyed by drilling, overdrilling, and sealing as outlined in the California Department of Water Resources Bulletin 74-90 Section 19(A)(2)(b). Destruction shall be accomplished by removing all well casings, filter packs, and annular seals within the boreholes. Abandonment of monitoring wells 1 through 4 shall be by backfilling the remaining borehole with a tremie pipe and neat cement to within five (5) feet but not less than two (2) feet of the existing ground surface elevation. After approval of the sealing and abandonment of each well by the NCEHD, the topsoil shall be backfilled and reseeded or resurfaced to match existing conditions.
 - 1. The Contractor is hereby notified that Monitoring Well 3 is an artesian well, and shall utilize appropriate equipment and materials to provide backpressure for complete controlled destruction of the well and sealing of the borehole. The Contractor shall also implement sediment and erosion controls for all drainage generated by the artesian well.
- B. Monitoring wells 5 through 7 shall be destroyed by perforating and/or pressure grouting as outlined in the California Department of Water Resources Bulletin 74-90 Section 19(A)(2)(a) by perforating the well casings and complete sealing by pressurized backfilling of the perforated wells with neat cement. Sealing material shall be pressurized to a minimum 25 psig and held at that pressure for a sufficient period to force the grout into the perforations and filter pack and allow to set (maximum pressure holding time of 24 hours per well). The top five (5) feet or more of the well shall be excavated and removed. Sealing material shall be placed to at least five (5) feet below the existing ground surface elevation. After approval of the sealing and abandonment of each well by the NCEHD, the top five (5) feet of topsoil shall be backfilled and reseeded or resurfaced to match existing conditions.
 - 1. The Contractor, at their option, may also complete destruction of monitoring wells 5 through 7 by complete removal of the casings, annular seals, and filter packs within the boreholes consistent with 3.02.A.
- C. If overdrilling is not allowed or inappropriate for the field conditions by the NCEHD or County Representative for any well, then the well casings shall be perforated and abandoned as described in 3.02.B.

3.03 SUGGESTED ORDER OF WORK

- A. A suggested order of work is presented below. The Contractor shall be responsible for final determination of the order of work, subject to the basic permits and requirements in this specification.
 - 1. Obtain NCEHD well destruction permit.
 - 2. Prepare and submit a water pollution control plan and other submittals for approval prior to proceeding with work.
 - 3. Arrange for handling of approximately 20 gpm of water flowing continuously from artesian well to the disposal location approved by the County Representative.
 - 4. Remove the existing wellhead seal.
 - 5. Install inflatable rubber packer or temporary wellhead that will allow access to the well interior.
 - 6. Perform perforation or well casing, annular seal and filter pack removal.
 - 7. Install tremie pipe to the bottom of the well and fill with concrete.

8. Excavate top five feet of well and backfill to grade and compact to 90% relative compaction outside of traffic areas and to 95% relative compaction within traffic areas.
9. Restore the site surface to match existing conditions.
10. Arrange for final inspection with NCEHD and complete and submit DWR Form 188 – Well Completion Report.

END OF SECTION