

MONITORING WELL WORKPLAN AND REPORT REQUIREMENTS

Prior to installation of any monitoring well, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approves the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation and analytical report, which shall include the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan

A. General Information:

- Purpose of well installation project
- Copies of County Well Construction Permits (to be submitted after workplan review)
- Monitoring well locations and rationale
- Survey details
- Equipment decontamination procedures
- Health and safety plan
- Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details:

- Describe drilling technique
- Sampling intervals and logging methods

C. Monitoring Well Design:

- Casing diameter and centralizer spacing (if needed)
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of proposed well construction details
- Type of well cap, bottom cap either screw on or secured with stainless steel screws
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

D. Well Development:

- Method of development to be used
- Method of determining when development is complete
- Parameters to be monitored during development
- Method of development water storage and disposal

E. Well Survey:

- Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
- Describe the well features to be surveyed (i.e. top of casing, vertical coordinates, etc.)
- Vertical accuracy shall be to at least 0.01 foot

F. Well Sampling:

- Map showing each sample location and sample identification number
- Minimum time after development before sampling (48 hours)
- Well purging method and amount of purge water
- Table with sample containers, collection method, and preservation method
- Table with sample volumes, sample containers, preservation agents, and hold times
- Tables with each analyte, analytical method, and practical quantitation limit
- Table with analysis to be performed at each sample location
- QA/QC procedures (field and laboratory)

G. Water Level Measurement:

- The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.01 foot.
- Method and time of water level measurement shall be specified.

H. Proposed time schedule for work.

SECTION 2 - Monitoring Well Installation and Analytical Report

A. Well Construction:

- Number and depth of wells drilled
- Date(s) wells drilled and completed
- Description of drilling and construction
- Scaled map of facility site features including monitoring wells, buildings, storage ponds, waste piles, etc.
- A well construction diagram for each well must be included in the report, and must contain the following details:
 - Total depth drilled
 - Drilling Contractor and driller name
 - Depth of open hole (same as total depth drilled if no caving occurs)
 - Method and materials of grouting excess borehole
 - Footage of hole collapsed
 - Length of slotted casing installed
 - Depth of bottom of casing
 - Depth to top of sand pack
 - Thickness of sand pack
 - Depth to top of bentonite seal
 - Thickness of bentonite seal

- Thickness of concrete grout
- Boring diameter
- Casing diameter
- Casing material
- Size of perforations
- Well elevation at top of casing
- Stabilized depth to groundwater
- Date of water level measurement
- Monitoring well number
- Date drilled
- Location

B. Well Development:

- Date(s) of development of each well
- Method of development
- Volume of water purged from well
- How well development completion was determined
- Method of effluent disposal
- Field notes from well development shall be included in report.

C. Well Survey:

- Tabulated data with the coordinate system, bench marks, and horizontal control points
- Tabulated data with monitoring location and horizontal and vertical coordinates
- Registered Engineer or Licensed Surveyor's report and field notes in appendix
- Describe the measuring points (i.e. ground surface, top of casing, etc.)

D. Well Sampling and Analytical Reports:

All analytical reports prepared for the Discharger's facility shall contain, at a minimum, the information listed below

- Tabulated field and analytical data with sample location identification numbers, water quality goals, field/analytical results, and highlighted data that is outside water quality goals
- Appendix with laboratory reports, COCs, and laboratory signatures on reports.
- Laboratory reports showing results, reporting units, MDLs, PQLs, "trace" results, flagged results, matrix effects, and QA/QC results.
- Site map(s) showing iso-concentration lines for Constituents of Concern
- Piper Diagrams and Stiff Plots comparing upgradient and downgradient water quality parameters.
- Discussion of results including, but not limited to, discussion of violations, exceedances, if all field and monitoring parameters were sampled and analyzed, description of groundwater flow direction, comparison of analysis and field sampling results to background and water quality goals, list of potential

- constituents of concern at each sampling location, and other relevant discussions.
- Certification statement signed by an authorized representative.
 - Report stamped by California Licensed engineer or geologist.