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CENTRAL DELTA WATER AGENCY

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November 15, 2011

Via Email to cwc@water.ca.gov; ssims@water.ca.gov; and rballant@water.ca.gov

California Water Commission
1416 Ninth Street
P.O. Box 942836
Sacramento, CA 94236-0001

Re: California Water Commission Meetings, November 16 & 17, 2011, Agenda Items 6 thru 28–Resolutions of Necessity.

Dear Chairperson Saracino and Commission Members:

The Central Delta Water Agency ("CDWA") hereby supplements the concerns on this matter which it previous raised orally at your September 21, 2011 and October 19, 2011 meetings, and in its written comments dated October 18, 2011.

1. **DWR is Unlawfully Bypassing the Precondemnation Survey Stage and Going Straight to the Condemnation Stage.**

CDWA previously discussed this glaring deficiency in its October 18, 2011 comments. It is clear that DWR has not yet performed the requisite environmental, geological and other surveys, nor the requisite consultations with the Underground Service Alert, the Central Valley Flood Protection Board, the local levee maintaining agencies (e.g., reclamation districts), the U.S. Army Corps, etc., that are necessary to determine the precise locations of the temporary and permanent easements it wishes to condemn. This failure to perform those precondemnation actions prevents DWR and the Water Commission from being able to make in good faith, and with adequate evidentiary support, the findings and determinations necessary to support a Resolution of Necessity, including the following essential findings and determinations in Code of Civil Procedure section 1245.230, subdivision (c):

(1) The public interest and necessity require the proposed project.
(2) The proposed project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury.
(3) The property described in the resolution is necessary for the proposed project.

None of those findings can be fairly made without the performance of the requisite precondemnation surveys and consultations necessary to determine precisely where DWR actually needs various easements and where the geotechnical activities can be feasibly performed.

As additional support for this contention, please see the November 15, 2011 letter from the Central Valley Flood Protection Board ("CVFPB") to the California Central Valley Flood Control Association, attached hereto as Exhibit "A," wherein the CVFPB explains the following at page 2:

> The [CVFPB] staff will review the work plans *and comment on the drill site locations*, mobilization, demobilization, and proposed method of backfill. *In so doing, the Board will consider any concerns raised by the LMA ["local (levee) maintaining agency"]*. *The [CVFPB] staff will also* share the drilling work plans with the USACE's Chief of Flood Protection and Navigation Section, located in the USACE Sacramento District, and *consider the USACE's comments as well*. The Board will attempt to work collaboratively with DWR, the LMA, and the USACE to address and resolve any potential concerns before any drilling takes place.

(Emphasis added.)

The proposed bore site locations that DWR is requesting the Water Commission to determine are "located in the manner that will be most compatible with the greatest public good and the least private injury," have not yet been reviewed by the CVFPB, the LMAs nor the USACE. Accordingly, at the present time, it entirely remains to be seen whether the proposed locations are in fact so located in such a manner.

The Water Commission should therefore direct DWR to perform *all* of the necessary precondemnation surveys and consultations to determine the precise bore locations *before* it requests Resolutions of Necessity to condemn easements for such locations. It would constitute a gross abuse of the Water Commission's discretion, and would be fundamentally unfair to the landowners as well as the general public, for the Water Commission to allow DWR to skip the performance of such surveys and consultations and adopt any such resolutions in advance of such performance.

2. The Geotechnical Activities are By No Means "Necessary" at the Present Time.

Condemnation is a draconian power that can only be exercised when forcibly taking a landowner's property against its will is truly "necessary."

Dr. Jerry Meral, Deputy Secretary of the California Natural Resources Agency, recently made it clear at the October 19, 2011 Assembly Water, Parks and Wildlife informational hearing,

"Bay Delta Conservation Plan- Status and Update," that the geotechnical activities are *not* necessary for the BDCP's EIR/EIS and, hence, that DWR will not be waiting for this information to release the public draft of that EIR/EIS.

This clarification is critically important because, if the information is not necessary for DWR, nor anyone else, to make an environmentally informed decision about the BDCP, then this information can wait until *after* that decision is made *and does not "need" to be acquired prior to that determination.*

The BDCP is not going anywhere, and will be stopped dead in its tracks, if the BDCP does not clear the CEQA and NEPA hurdles, i.e., if DWR and other decision makers do not approve it notwithstanding any potentially significant environmentally impacts it may have.

Accordingly, since it is clear that the geotechnical information is not necessary to clear the CEQA and NEPA hurdles, DWR's desire to jump-the-gun and flesh out the final design of its preferred project in sufficient enough detail to obtain highly detailed permits from the USACE, and potentially others, is merely that, a desire. It is not a "need." It certainly does not rise to the type of constitutional need which merits the government exercising its draconian condemnation power and forcing itself onto lands against the landowners' will.

While DWR may very well "want" to have final engineering plans in place *just in case* the powers that be (which include DWR) actually approve a peripheral canal or tunnel (and all of their associated works), that "want" is not sufficient to support a resolution of necessity. *If* the powers that be ultimately clear such works on CEQA and NEPA grounds, then, and only then, could DWR arguably make the case that the implementation of such works "necessitates" further permits, and that those permits "necessitate" additional, highly detailed, site-specific geotechnical information.

A video of Dr. Meral's testimony can be found at http://www.calchannel.com/channel/viewVideo/3082 The following is an excerpt from that testimony beginning at approximately 01:26:00/02:00:00:

> Sen. Lois Wolk: "I have a number of questions about the timelines that are listed in the M.O.A. In the M.O.A. it say's that basically you're looking to release an administrative draft, fairly quickly, in February of next year, and then a public draft a few months after that in May 2012. This issue of getting the geotechnical information that you're getting out of the test drillings, none of that is going to start until after this EIR is in circulation… SO, How does that work? ... I don't get the disconnect with the timeline."
>
> Dr. Meral: "We hope, and I'd say it's our belief that the information we've already gotten… a lot of people who have these entry permits, some have said 'Fine, Go ahead do your drilling', and so we have a scattering throughout the Delta

of people who haven't had a problem with us having the entry permits. Many have not, and we could go into that. *We think that the data we have collected so far, plus historic data from previous efforts we have dating back many, many years will be enough for this initial EIR/EIS; however, I should mention that we need another permit, if we get through all these permits, we need another permit, actually several, from the Corps of Engineers, and there they will require us to have 60% of the design of any facility completed, and that is gonna come right on the heels of this effort*, and so if we continue to have problems with the entry permits, as you have described, we will have problems, probably, getting the Corps of Engineers permit, because to do final design you need a lot better geotechnical information. I think we will have enough to get through the EIR/EIS. There will be a test in a sense by the federal agencies to see if they think we have enough, but the next step is critical, and that will be when we will have to do better on that."

(Emphasis added.)

Those Corps permits that are "right on the heels of this [CEQA/NEPA] effort" are permits that can certainly wait until that CEQA/NEPA effort runs its course. While DWR's actions would make one think that the decision to approve a peripheral canal or tunnel has already been made prior to the conclusion of the CEQA/NEPA process, and, hence, now is the time for DWR to pursue the final design for such a facility and start implementing it, the reality is that DWR has not, and cannot, legally make such a premature decision prior to the conclusion of that process. And until it does properly make such a decision, the Corps, and any other, permits necessary to advance such a facility beyond the CEQA/NEPA process do not, and cannot, rise to the level of "necessity" required to invoke its last resort, and draconian, condemnation power.

Mark Cowin, the Director of the Department of Water Resources, echoed Dr. Meral's testimony when Mr. Cowin spoke at the Water Commission's October 19, 2011 meeting. A video of Dr. Meral's testimony can be found at http://cawater.rmxpres.com/webcast/data/dwr10192011/main.htm The following is an excerpt from his comments at approximately 04:58:00/06:41:48:

"I am Mark Cowin, Director of the Department of Water Resources. . . . [S]o let me be as succinct and clear as I can on why we need to proceed with these drillings next year. As part of our planning process we need to not only complete our BDCP application, our EIR/EIS draft document and public document and proceed with the NEPA/CEQA compliance, but there are a myriad of other permits that we also need to proceed with including our agreements, our permits with the USACE, our 404 and 408 permits that will be necessary to proceed with the project. It is my understanding that in order to proceed with those applications a 30% design is required, meaning from 0-100% of engineering planning work

> necessary you have to get to a 30% level of design in order to complete those applications for the USACE. We can't get that far without these additional test borings. So while we may find an opportunity to also use this information in the NEPA/CEQA process, and we will if that opportunity arises, *we have already decided that we can proceed with NEPA/CEQA without this additional information*, however, it will be necessary for the USACE process, and if by chance we can also use it in the NEPA/CEQA process we will. . . ."

(Emphasis added.)

The NEPA/CEQA process is clearly the "mother" of all processes DWR must complete before it can lawfully advance to the implementation stage of the BDCP and acquire all other permits for the BDCP. In fact, all other agencies with discretionary approval authority over the project are legally required to also consider the *final* EIR/EIS before they can issue their respective permits for the BDCP.

Again, while DWR may "want" to get the jump start on those other "myriad of permits," it is by no means constitutionally "necessary" that it obtain such a jump start. The exercise of condemnation power requires a considerably more heightened need for an activity. At the current, preliminary stages of the CEQA/NEPA process, DWR's desire to speed up the process of obtaining permits for a project that many never clear that process and, hence, may never become necessary, simply fails to rise to the level of need required invoke DWR's condemnation powers.

3. **Additional Concerns/Issues.**

There are numerous other concerns/issues, including the following that are set forth in a more summary fashion.

a. **Lack of Legal Descriptions.**

Despite the extensive discussion of the need for legal descriptions for the proposed easements which DWR is seeking to condemn, as of November 15, 2011, DWR has apparently failed to produce any such descriptions. Without such descriptions, Resolutions of Necessity cannot lawfully issue for any of DWR's requested temporary or permanent easements.

b. **DWR has Failed to Provide the Requisite Offer to Purchase the Property from *All* Affected "Owners of Record."**

A Resolution of Necessity cannot be adopted until "the offer [of just compensation] required by Section 7267.2 of the Government Code has been made to the owner or owners of record, or the offer has not been made because the owner cannot be located with reasonable diligence." (Cal. Civ. Proc. Code, § 1245.230, subd. (c)(4).) Thus far, it appears DWR has only

purported to make such offers to the owners of record of the underlying "fees" at issue.

Elsewhere in the eminent domain law in the Code of Civil Procedure, "owners of record" is broadly defined to include "the owner of the legal or equitable title to the fee *or any lesser interest in property* as shown by recorded deeds or other recorded instruments." (See e.g., Cal. Civ. Proc. Code, § 1255.450, subd. (b), emphasis added.) Because it is not only the fee owner's property interests that may be "taken" via DWR's proposed condemnation of easements, but also those of any other owners of "any lesser interests in property," the mandatory section 7267.2 offer must necessarily be made to all such other owners, which DWR has, thus far, failed to demonstrate it has duly made, or even attempted to make. Accordingly, in the absence of such offers, the Water Commission cannot lawfully issue any Resolutions of Necessity.

c. **CEQA Deficiencies.**

i. **The Water Commission Must Assume the Role of Lead Agency for this Project.**

CEQA Guidelines section 15052 provides:

> "(a) Where a responsible agency is called on to grant an approval for a project subject to CEQA for which another public agency was the appropriate lead agency, the responsible agency shall assume the role of the lead agency when any of the following conditions occur:
>
> (1) The lead agency did not prepare any environmental documents for the project, and the statute of limitations has expired for a challenge to the action of the appropriate lead agency.
>
> (2) The lead agency prepared environmental documents for the project, but the following conditions occur:
> (A) A subsequent EIR is required pursuant to Section 15162,
> (B) The lead agency has granted a final approval for the project, and
> (C) The statute of limitations for challenging the lead agency's action under CEQA has expired.
>
> (3) The lead agency prepared inadequate environmental documents without consulting with the responsible agency as required by Sections 15072 or 15082, and the statute of limitations has expired for a challenge to the action of the appropriate lead agency."

The conditions set forth in subsections (a)(2) and (3) of section 15052 require the Water Commission to assume the role of lead agency for this project. As lead agency, the Water

Commission must re-evaluate the entirety of the project and either prepare a "subsequent EIR" pursuant to subsection (a)(2) or start the environmental review from scratch pursuant to subsection (a)(3).

While CDWA discussed the Water Commission's duty to prepare a subsequent EIR pursuant to section 15162 in its October 18, 2011 written comments, because of the unique situation in this case, where the Water Commission was not identified as a responsible agency at the time DWR processed its Mitigated Negative Declaration for this project, the Water Commission also falls within subsection (a)(3) of section 15052 because it was undisputedly *not* properly consulted with pursuant to sections 15072 and 15082; the Mitigated Negative Declaration was inadequate for numerous reasons including the failure to address any of the site-specific impacts from the drilling locations [because those locations were not identified with any precision whatsoever--see CDWA's October 18, 2011 written comments]; and the statute of limitations for a challenge to the Mitigated Negative Declaration has long passed.

Accordingly, the Water Commission has major CEQA duties it has yet to fulfill prior to being able to lawfully authorize any Resolutions of Necessity for the instant geotechnical activities, not the least of which include assuming the role of lead agency and carrying out all the various responsibilities in connection therewith.

d. **Potential for Groundwater Contamination.**

The potential for drinking or other groundwater contamination as a result of DWR's geotechnical activities is one of many potentially significant impacts that takes on heightened significance when the actual proposed bore sites are meaningfully identified (which they were not when DWR issued its Mitigated Negative Declaration for those activities). For example, a common requirement by the various County Environmental Health Departments, who are the entities responsible for protecting against such contamination, is the requirement that the location of any potential sources of contamination be identified in the application for a permit for all borings, including getotechnical or geophysical exploratory borings. (See e.g., San Joaquin County's Well Standards [Ordinance Code section 9-1115.6], at page 8, section 2.1.1.6 [a copy of page 8 along with the cover page to those standards is attached hereto as Exhibit "B".)

It is well-recognized that the mere act of boring holes can result in groundwater contamination, in addition to fact that contamination can result from a defective or improper or otherwise compromised "sealing" of the bore hole after the exploration is complete. While the various Counties are responsible for taking precautions to avoid any such groundwater contamination, DWR has indicated in its response to comments on its Mitigated Negative Declaration that:

> "DWR, as a State agency, is exempt from county regulation unless express statutory requirements subject the State to the specific regulation. There is no express statute requiring the State to obtain a County permit for exploratory

drilling activities that are described in this IS/MND. Similarly, the State is exempt from the county fee to obtain such a permit."

(See "pdf" p. 17 from: http://baydeltaconservationplan.com/Libraries/Geotechnical/Appendix_A_Response_to_comments_2010_MND_Final_Draft_09_28_2010.sflb.ashx)

Accordingly, DWR will be bypassing the various County permitting, inspection and other requirements which are specifically designed to minimize the risk of groundwater contamination. The result is that the essential oversight and regulation the Counties provide to protect the landowners' drinking water wells, and other groundwater sources, from contamination from viruses, pollutants, or any other contaminants will be entirely lacking thereby increasing the risk for such contamination.[1] [2]

In Sacramento County's ordinance, SCC No. 1455, "Relating to Wells and Pumps," Sacramento County recognizes, for example, that the mere act of boring can indeed result in contamination prior to the completion and ultimately "sealing" of the bore hole. As explained in section "(8)" on page 11 of the ordinance:

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[1] See, for example, Yolo County's well information at http://www.yolocounty.org/Index.aspx?page=111 , copies of which are attached hereto as Exhibit "C", which explains:

> "Each well or soil boring constructed creates a route for current or future contamination to travel from the ground surface to lower levels or between soil horizons and/or groundwater aquifers.
>
> The goal of this program is to insure wells and borings are properly constructed to protect groundwater or soil horizons from being contaminated by other layers or future spills at the ground surface. To accomplish this, a permit and inspection is required for installation, abandonment, or modification of all wells and borings that will be drilled to groundwater, or to a depth of 20 feet or greater where groundwater is more than 20 feet below the ground surface."

[2] In addition to the various attachments to these comments, addition evidence of such County oversight and regulation can be found at the following links which CDWA hereby incorporates by reference: (1) Sacramento County's ordinance, SCC No. 1455, "Relating to Wells and Pumps," located at: http://www.emd.saccounty.net/Documents/Info/EC/Wells/SacramentoCountyCodeChapter6.28_04-13-10.pdf ; (2) San Joaquin County's "Well Standards" [Ordinance Code section 9-1115.6], located at: http://www.co.san-joaquin.ca.us/EHD/docs/Well%20Standards.pdf ; and (3) Solano County's "Well Standards," located at http://www.solanocounty.com/depts/rm/environmental_health/technical/well_n_on_site_sewage_disposal_program/well_standards.asp .

"Wells that Penetrate Zones Containing Poor-Quality Water, Pollutants, or Contaminants. If geologic units or fill known to contain poor-quality water, pollutants, or contaminants are penetrated during drilling, *and the possibility exists that poor-quality water, pollutants, or contaminants could move through the borehole during drilling and well construction operations and significantly degrade groundwater quality in other units before sealing material can be installed*, then precautions (e.g., conductor casing, borehole liners, special drilling equipment, etc.) shall be taken to isolate zones containing poor-quality water, pollutants, or contaminants during drilling and well construction operations."

(Pages 1 through 11 of said ordinance is attached hereto as Exhibit "D," emphasis added.)[3]

This recognized possibility of contaminants "mov[ing] through the borehole during drilling . . . operations and significantly degrad[ing] groundwater quality in other units before sealing material can be installed," is a possibility that has not yet been adequately investigated nor mitigated to the extent feasible. Moreover, there has, thus far, apparently been no attempt to identify the locations of any "geologic units or fill known to contain poor-quality water, pollutants, or contaminants . . . ." Again, when DWR prepared its Mitigated Negative Declaration for the geotechnical activities, DWR did not know where the bore sites would be located and, hence, did not in any manner attempt to ascertain the locations of any such units or fill. Accordingly, it is the Water Commission's responsibility as either a responsible agency or a lead agency to fill that, and all other, voids in DWR's Mitigated Negative Declaration.

Moreover, the Water Commission's duty to protect against drinking water contamination and any other "private injury" or "public harm" goes beyond CEQA and is an essential part of its responsibility to ensure that the activities are duly conditioned so as to ensure that "[t]he proposed project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury." (Code Civ. Proc., § 1245.230, subd. (c).) Thus far, that responsibility has been entirely unfulfilled. Feasible protections including mandatory pre-drilling site inspections for potential sources of contamination, mandatory setbacks from such sources and mandatory pre- and post-drilling testing of nearby drinking water wells can and should be imposed as conditions in any Resolutions of Necessity.

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[3] The entirety of the ordinance can be found here: http://www.emd.saccounty.net/Documents/Info/EC/Wells/SacramentoCountyCodeChapter6.28_04-13-10.pdf

4. **Conclusion.**

For the foregoing reasons, in addition to all of the other concerns and objections previously raised by the CDWA and all other participants, it is respectfully requested that the Water Commission *refrain* from issuing any Resolutions of Necessity at this time and, revisit such issuance, if at all, after all of those concerns and objections have been duly addressed.

Very truly yours,

Dante John Nomellini, Jr.

Enclosures: (Exhibits A thru D)

Exhibit "A"

(to Central Delta Water Agency's Comments re "California Water Commission Meetings, November 16 & 17, 2011, Agenda Items 6 thru 28–Resolutions of Necessity")

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-2380 FAX: (916) 574-0682

November 15, 2011

Ms. Melinda Terry
Executive Director
California Central Valley Flood Control Association
910 K Street, Suite 310
Sacramento, California 95814

Dear Ms Terry:

This letter addresses your concern about how the Central Valley Flood Protection Board (Board) and the California Department of Water Resources (DWR) will work together regarding proposed drill locations for geotechnical studies related to the Bay Delta Conservation Plan (BDCP). The Board directed staff to work with the U.S. Army Corps of Engineers (USACE) and DWR to devise a method of overseeing geotechnical drilling investigations for the BDCP. We believe an important part of the planning process for geotechnical investigations involves providing advance notice to, and receiving endorsement by, the local maintaining agency (LMA) affected by the drilling. The LMAs include reclamation districts, levee districts, counties, and cities that have provided assurances to the Board that facilities and features within the adopted State Plan of Flood Control will be maintained to standards set by the USACE.

DWR has agreed to work with the Board by providing proposed geotechnical investigation work plans and by identifying specific drill sites that would be of concern to the Board, such as:

1. Drill sites located on or within the prism of a federal/State levee;

2. Drill sites located within 50 feet of the landside or waterside toe of a federal/State levee;

3. Drill sites located on lands held in fee or by easement for the Sacramento-San Joaquin Drainage District; and

4. Drill sites located anywhere within a designated floodway or regulated stream as defined in CCR Title 23.

The federal/State project levees, regulated streams, and designated floodways can be easily located using the Board's Best Available Maps Viewer located at the following internet link:

http://gis.bam.water.ca.gov/bam/

DWR follows safety standards documented in the *Bay Delta Conservation Plan Field Safety Plan for Geotechnical Investigations*. Copies are available upon request.

While the Board does not have permit authority over DWR's geotechnical drilling investigations for the BDCP, DWR has agreed to share the drilling work plans with the affected LMA and the Board prior to mobilization of equipment at drill sites. The Board staff will review the work plans and comment on the drill site locations, mobilization, demobilization, and proposed method of backfill. In so doing, the Board will consider any concerns raised by the LMA. The Board staff will also share the drilling work plans with the USACE's Chief of Flood Protection and Navigation Section, located in the USACE Sacramento District, and consider the USACE's comments as well. The Board will attempt to work collaboratively with DWR, the LMA, and the USACE to address and resolve any potential concerns before any drilling takes place.

Please call me if you have any questions about this matter at 916) 574-0609, or you may contact Len Marino, the Board's Chief Engineer, at (916) 574-0608.

Sincerely,

Jay S. Punia

Jay S Punia,
Executive Officer

Bcc: Allan Davis, DWR Real Estate

Exhibit "B"

(to Central Delta Water Agency's Comments re "California Water Commission Meetings, November 16 & 17, 2011, Agenda Items 6 thru 28–Resolutions of Necessity")

San Joaquin County

Well Standards

(San Joaquin County Ordinance Code Section 9-1115.6)

Amended by Board of Supervisors May 8, 1993, R-93-307

County Ordinance History	
December 21, 1971	Ordinance 1862
July 29, 1992	Ordinance 3675
December 13, 1994	Ordinance 3817

City Municipal Codes	
Stockton	7-700
Lodi	8.08.010
Tracy	5.32.010
Manteca	13.08.010
Escalon	13.04.380 & Ordinance 130
Ripon	13.16.010
Lathrop	8.36.010

Environmental Health Department
600 East Main Street
Stockton, CA 95202
(209) 468-3420

February 2005

2. PERMIT

2.1. An application for a permit is required for a Well, including: Geotechnical, Geophysical, Recharge, Reconditioning, Deepening, Cathodic Protection, Monitoring*, Test Well, Subsurface Boring, Injection, Extraction and Vapor Probe. (*See Section 13 for Monitoring Well Construction Requirements)

2.1.1. The licensed well contractor (C-57), or his authorized representative, shall make application on forms furnished by the San Joaquin County Environmental Health Department. The application shall contain the following information and a plot plan drawn to scale.

2.1.1.1 Owner's name and address.

2.1.1.2 Address of parcel and/or Assessor's parcel number (APN).

2.1.1.3 Names of streets or roads nearest to, or bordering the property.

2.1.1.4 Outline of the property giving dimensions and North direction.

2.1.1.5 Dimensioned outlines and locations of all existing and proposed structures, including covered areas such as patios, driveways and walkways.

* [2.1.1.6 Location of house sewer outlet, public sewer, sewage disposal system or proposed sewage disposal system, proposed expansion of sewage disposal system, or any other possible source of contamination.]

2.1.1.7 Location of proposed new well, other existing wells and sewage disposal systems within a radius of 100 feet on the property or adjoining property.

2.1.1.8 Intended use of the well.

2.1.1.9 Name, address and license number of licensed well driller/pump contractor.

2.1.1.10 Note on permit application if the well is in a flood plain or drainage course.

2.2. A pump permit shall be required anytime the sanitary seal in the wellhead is removed.

2.2.1. The owner of the property or the appropriate licensed well or pump contractor shall make application on forms furnished by the EHD.

2.2.2. The installation or repair of a pump will require a plot plan showing the location of the well and pump and any structures.

2.2.3. If pump and motor are not installed by the well contractor, approval of the well construction will be given for the contracted work and a separate permit shall be obtained for installing the pump and motor.

Exhibit "C"

(to Central Delta Water Agency's Comments re "California Water Commission Meetings, November 16 & 17, 2011, Agenda Items 6 thru 28--Resolutions of Necessity")

MONITORING WELLS AT WASTE AND UNDERGROUND TANK SITES

- Program Information
- Monitoring Well/Soil Borings FAQ's
- Permit Application
- Contact Us

Program Information

Wells or soil borings are often constructed to investigate subsurface conditions of a property where there may have been contamination by hazardous materials or hazardous waste. In addition wells and soil borings may be constructed to monitor water levels or to provide geotechnical data.

Each well or soil boring constructed creates a route for current or future contamination to travel from the ground surface to lower levels or between soil horizons and/or groundwater aquifers.

The goal of this program is to insure wells and borings are properly constructed to protect groundwater or soil horizons from being contaminated by other layers or future spills at the ground surface. To accomplish this, a permit and inspection is required for installation, abandonment, or modification of all wells and borings that will be drilled to groundwater, or to a depth of 20 feet or greater where groundwater is more than 20 feet below the ground surface.

Monitoring Well/Soil Borings FAQ's

- **When is a permit required?**

  All wells must be permitted: monitoring wells, vapor wells, extraction wells, sparging wells, bioventing wells, cathodic wells, etc.

  Soil borings must be permitted if 20 feet or greater in depth or anytime that groundwater is encountered.

  IMPORTANT! For projects on multiple parcels a separate permit application is required for each parcel. Distinct projects on multiple parcels may pay fees as if the project was only on one parcel.
- **When do I have to tremie?**

  Tremie is required anytime that groundwater is encountered or exceeding 20 feet for a dry boring.
- **What is the permitting process and how long does it take for my permit to be approved?**

  A Monitoring Well/Soil Boring application must be filled out completely with the correct fee paid. The turnaround time is generally two weeks. Permits are valid for 120 days.
- **What is required with the application?**

  For wells: a well construction diagram and map(s) showing where the wells will be located on site and the location of the site, workplan or a copy of the letter from a regulatory agency approving or directing

work. A workplan approved by the State Water Resources Control Board is required if the property is documented as being a contaminated site.

For soil borings: map(s) showing where the borings will be located on site and the location of the site, workplan or regulatory agency letter when needed. A workplan approved by the State Water Resources Control Board is required if the property is documented as being a contaminated site.

What are the application fees?

Our fee schedule can be found at the following link: Environmental Health Fees. For projects that involve 4 or more soil borings the initial fee is for the first 4 borings. Additional time will be billed on an hourly basis. This only applies to work with exploratory soil borings, not with wells.

- **Who and when do I call for a grout inspection?**

Two (2) working days notification is required for all grout inspections. The inspector to contact would be the staff member who approved the permit.

Permit Application

- Monitoring Wells & Soil Borings Permit Application
- General Permit Conditions for Monitoring Wells & Soil Borings

Contact Us

Please feel free to contact us by any of the following methods:

Yolo County Environmental Health
137 N. Cottonwood St. Suite 2400
Woodland, CA 95695

(530) 666-8646
Fax: (530) 669-1448
environmental.health@yolocounty.org

Exhibit "D"

(to Central Delta Water Agency's Comments re "California Water Commission Meetings, November 16 & 17, 2011, Agenda Items 6 thru 28–Resolutions of Necessity")

SCC NO. 1455

AN ORDINANCE OF THE SACRAMENTO COUNTY CODE RELATING TO WELLS AND PUMPS

The Board of Supervisors of the County of Sacramento, State of California, ordains as follows:

SECTION 1. Section 6.28.000 of Chapter 6.28, Title 6, of the Sacramento County Code is hereby amended to read as follows:

6.28.000 Declaration of Purpose and General Provisions.

A. Purpose of Chapter. It is the purpose of this Chapter to protect the health, safety, and general welfare of the people of the County of Sacramento by ensuring that the groundwater of this County will not be polluted or contaminated by improper well construction, modification, repair, inactivation, or destruction, or by improper pump installation. To this end, minimum requirements are contained in this Chapter for construction, modification, repair, inactivation, and destruction of wells, as defined in this Chapter, and for installation of pumps.

B. Tense or Gender. Words used in the present tense include the future as well as the present. Words used in the masculine gender include the feminine and neuter. The singular number includes the plural, and the plural the singular.

C. Section Headings. When contained in this Chapter, section headings shall not be deemed to govern, limit, modify, or in any manner affect the scope, meaning, or intent of the provisions of any section.

D. Words as Defined in Other Documents. Except as otherwise required by the context of this Chapter, the terms used in this Chapter shall have the same meaning as in Chapter 10 of Division 7 of the California Water Code, and the Department of Water Resources Bulletin 74-81 and subsequent supplements or revisions.

E. Individual Wells Required. When individual water wells are the proposed domestic water supply, each lot or parcel shall have its own individually drilled well located on the subject lot or parcel. This provision shall not apply to lots or parcels served by an approved public water system.

F. Discovery of Contamination. Any person who, in the course of drilling any exploratory boring or well for which a permit is required pursuant to this Chapter, detects contamination or pollution as defined in Section 6.28.010(D) in soil or groundwater, or both, by analytical means, shall notify the Sacramento County Environmental Management Department, Environmental Compliance Division, within sixty days of such detection, unless the detection is in a supply well, in which case notification shall occur within two working days of detection. This requirement shall not apply to sites that are actively overseen by the California Department of Toxic

Substances Control, the California Regional Water Quality Control Board, Central Valley Region, or the Sacramento County Environmental Management Department.

G. Consultation Zone. Any application for a well permit within two thousand (2000) feet of a known groundwater contaminant plume is subject to special review by appropriate regulatory agencies, including but not limited to the Sacramento County Environmental Management Department and the California Regional Water Quality Control Board, Central Valley Region, to evaluate potential impacts to public health and groundwater quality.

H. Best Available Technology (BAT). The standards contained in this Chapter provide a minimum level of protection for groundwater resources of Sacramento County. New materials and techniques that are developed in the future shall be encouraged and allowed, contingent upon their approval by the Enforcement Agency, if they equal or exceed the standards in this Chapter in performance and level of protection.

I. Responsibility for Compliance. The well owner shall be responsible for compliance with all applicable provisions of this Chapter. In addition, the applicant for a permit to complete any activity regulated by this Chapter shall be responsible for compliance with all applicable provisions of this Chapter until the regulated activity has been completed.

SECTION 2. Section 6.28.010 of Chapter 6.28, Title 6, of the Sacramento County Code is amended to read as follows:

6.28.010 Definitions.

A. "Applicant" means (1) the legal owner(s) of the property on which the pump is to be installed or repaired, or on which the well is to be constructed, modified or repaired, inactivated or destroyed; or (2) a licensed contractor who shall perform the work on the well or pump; or (3) the owners' or contractors' agent authorized in writing to make an application on behalf of the principal.

B. "Board" means the County of Sacramento Board of Supervisors, which is the governing Board, within the unincorporated area of the County, with authority over well standards.

C. "Construction" means digging, boring, drilling, casing, perforating, screening, gravel packing and sealing of wells, or installing of a well pump, in accordance with all standards adopted by this Chapter.

D. "Contamination" and "pollution" shall have meanings ascribed to them by the California Water Code, Section 13050.

E. "Destruction of wells" means the proper decommissioning of wells to ensure that the groundwater supply is protected and preserved for future use and to eliminate potential physical hazards, in accordance with all standards adopted by this Chapter.

F. "Director" means the Director of the Sacramento County Environmental Management Department, or his designee.

G. "Emergency" means a stoppage, interruption or significant reduction of water supply to domestic, industrial or agricultural uses.

H. "Enforcement Agency" means the County of Sacramento, Environmental Management Department.

I. "Modification" or "repair" means the deepening, reperforation, sleeving, sealing or replacement of a well casing, or the repair or replacement of a well pump.

J. "Nuisance" means a well which contaminates or pollutes, or which threatens to contaminate or pollute, the groundwater of the County in a manner that jeopardizes the health and safety of the public. A "nuisance" also means an unsanitary or unsafe condition resulting from well construction, operation, modification, repair, inactivation, or destruction, or from pump installation, operation, repair, or replacement.

K. "Permit" means a printed document, issued by the Enforcement Agency, which permits the construction, modification, repair, inactivation, or destruction of a well, or the installation, repair, or replacement of a well pump.

L. "Person" means any individual, trust, firm, joint stock company, corporation, partnership or association. "Person" also includes any city, county, district, the state, the federal government or any agency thereof to the extent that such persons may lawfully be regulated under this Chapter.

M. "Public Agency" means any public agency of the State including, but not limited to, cities, counties, districts, agencies and authorities.

N. "Water table" means the top of the saturated zone where unconfined groundwater is under atmospheric pressure.

O. "Well" or "water well" means any artificial excavation constructed by any method for the purpose of extracting water from, or injecting water into, the underground. In addition, for purposes of this Chapter, the following structures are also defined as wells: abandoned wells, agricultural wells, air conditioning wells, cathodic protection wells, community domestic wells, exploratory holes (borings), extraction wells, horizontal wells, inactive wells, individual domestic wells, industrial wells, injection wells, monitoring wells, test wells, vapor extraction wells, and water supply wells. It is not intended that potholes, drainage trenches or canals, waste water ponds, shallow root zone piezometers, stock ponds, leaching pits, or similar excavations be included within the definition of a well.

1. "Abandoned well" means any well that has not been used for a period of one year, unless the owner demonstrates intention to use the well again, by obtaining an inactivation permit.

2. "Agricultural well" means any well used to supply water only for irrigation or other agricultural purposes.

3. "Air conditioning well" means any well constructed to return to the ground water which has been used as a coolant in air conditioning processes.

4. "Cathodic protection well" means any artificial excavation constructed by any means for the purpose of installing equipment or facilities for the protection electrically of metallic equipment in contact with the ground.

5. "Community domestic well" means any water well used to supply water for domestic purposes to a public water system as defined by the California Health & Safety Code, Section 116275. Such wells are variously referred to as "municipal wells," "city wells," "public water supply wells" or "small water system wells."

6. "Exploratory hole (boring)" means an uncased temporary excavation or boring drilled to a depth within ten (10) feet of groundwater, or deeper, based on

available groundwater data, whose purpose is the immediate determination of hydrologic or geologic conditions at a site.

7. "Extraction well" means an artificial excavation constructed by any method for the purpose of removing groundwater to be used either for permanent dewatering, for use in an open-loop geothermal heat exchange system, or for removal of groundwater for cleanup of contamination.

8. "Geothermal heat exchange well" means any uncased artificial excavation constructed by any method for the purpose of using the heat exchange capacity of the earth for heating and cooling and in which the ambient ground temperature is 86° Fahrenheit (30° Celsius) or less and which uses a closed loop fluid system to prevent the discharge or escape of its fluid into the surrounding aquifers or geologic formations. Geothermal heat exchange wells are also known as ground source heat pump wells. (Water Code § 13713)

9. "Horizontal well" means a well drilled horizontally or at an angle different from vertical.

10. "Inactive well" means any well that is not routinely operated, but is intended to be reused in the future, and is capable of being made operable with a minimum of effort, and is not a nuisance, and for which an inactivation permit has been obtained.

11. "Individual domestic well" means any water well used to supply domestic water to one water connection, either residential or commercial, serving fewer than twenty-five (25) persons.

12. "Industrial well" means any water well used to supply industry on an individual basis (in contrast to supplies provided through community systems).

13. "Injection well" means an artificial excavation constructed by any method for the purpose of introducing water, nutrient solutions, treated water, or reclaimed water into the underground as a means of replenishing groundwater basins, or enhancing recovery of chemical constituents, or establishing hydraulic control over local groundwater, or as part of an open-loop geothermal heat exchange system.

14. "Monitoring well" means any artificial excavation constructed by any method for the purpose of monitoring fluctuations in groundwater levels, quality of underground waters, or the concentration of contaminants in underground waters.

15. "Test well" means a cased well constructed to obtain information needed for the design of other wells.

16. "Vapor extraction well" means an artificial excavation constructed by any method for the purpose of injection, monitoring or extraction of vapors, or liquids, or both, into or from the predominantly unsaturated zone above the water table. It is not intended that temporary soil vapor sample borings advanced to a depth of 5 feet or less be included within the definition of a vapor extraction well.

17. "Water supply well" means any well constructed for the purpose of water supply. This includes community and individual domestic wells, and agricultural or industrial water wells as defined by state well standards or by this Chapter.

18. "Exempt wells" means the following wells, which are exempt from the requirements of this Chapter: (1) any well constructed under the jurisdiction of the State Department of Conservation, except any such well which is converted to a use regulated by this Chapter; (2) any well used for the purpose of dewatering excavations

during construction or for stabilizing hillsides or earth embankments; or (3) other wells whose regulation is not necessary to fulfill the purpose of this Chapter, as determined by the Enforcement Agency.

P. "Well owner" means the owner of the property on which the well is located, unless the well has been installed in conjunction with an investigation of a known or suspected release of a hazardous material, or unless the well has been installed for geotechnical purposes by a person that does not own the property on which the well is located, or unless well ownership has been legally changed by a transfer of water rights or otherwise. If the well has been installed in conjunction with an investigation of a known or suspected release of a hazardous material, or for geotechnical purposes by a person that does not own the property on which the well is located, the well owner is the person responsible for conducting the environmental or geotechnical investigation.

SECTION 3. Section 6.28.030 of Chapter 6.28, Title 6, of the Sacramento County Code is amended to read as follows:

6.28.030 Permits.

A. Permit Required: No person shall dig, bore, drill, deepen, modify, repair, inactivate, or destroy a well, or install, repair, or replace a well pump without first applying for and receiving a permit as provided in this ordinance unless exempted by law. A separate permit and fee is required for each well or pump. The separate permit and fee requirement may be waived by the Enforcement Agency in cases where multiple wells or exploratory borings of similar construction will be drilled as a single project. Projects shall be given waiver consideration on a case-by-case basis, upon the request of the applicant. Separate permit and fee waivers must ensure full cost recovery by the Enforcement Agency. Where removal of a well pump or breaking of the well seal is not necessary, a pump permit shall not be required. It is not intended that a permit be obtained for the installation of a temporary pump.

1. Persons to Whom Permits Shall be Issued. Permits shall be issued pursuant to this Chapter only to the legal owner of the property on which the well is to be constructed, modified, repaired, or destroyed, or on which the pump is to be installed or repaired, or to a person holding a valid California C-57 contractor's license as described below, or to the owner's or driller's authorized representative. Permits for inactivation of wells shall be issued only to the legal owner of the property on which the wells are to be inactivated.

All construction, modification, repair, or destruction work on wells shall be performed by a person who possesses a valid C-57 contractor's license in accordance with the provisions of the California Business and Professions Code, Section 7000, et seq. and Water Code Section 13750.5. Installation, repair, or replacement of a well pump shall be performed by a person who possesses a valid C-57, C-61 or Class A contractor's license. Such license shall be in effect and in good standing with the State Contractors' Licensing Board.

In accordance with the California Labor Code, Section 3800, the Enforcement Agency shall confirm with the California Contractors State License Board that the applicant has signed a declaration under penalty of perjury verifying workers'

compensation coverage or exemption from coverage, as required by Section 19825 of the Health and Safety Code. The Enforcement Agency's confirmation shall take place by electronic means at the time of permit issuance.

2. Late Fee for Failure to Obtain Permit. Any person who commences any work for which a permit is required by this Chapter without having first obtained a permit shall be required to pay a late fee equal to twice the standard permit fee.

3. Emergency Work. The above provisions shall not apply to emergency work required to maintain drinking, agricultural, or industrial water supply systems, or to prevent an imminent and substantial threat to public health and safety. In such cases, the person responsible for the emergency work shall comply with the following:

a. Time Limit. Apply for a permit within three working days after commencement of the emergency work.

b. Urgency. Satisfy the Enforcement Agency that such work was urgently necessary. If the cause for urgency is not satisfactorily shown, penalties as described in Section 6.28.120 shall be imposed.

c. Conformance with Standards. Demonstrate that all work was performed in conformance with the technical standards set forth in this Chapter.

B. Application Procedure. Applications for permits shall be made to the Enforcement Agency and shall contain all such information the Enforcement Agency requires to accomplish the purposes of this Chapter. This application shall be made in writing and signed by the applicant on such forms as may be prescribed by the Enforcement Agency. The application shall be accompanied by the required application fee.

C. Application Fees. Application fees adopted and modified by the Board shall accompany the permit application. For activities regulated in this Chapter which occur at sites for which other cost recovery mechanisms are available, application fees may be deferred, at the approval of the Enforcement Agency, pending recovery of those costs incurred for oversight of such activities. The party responsible for payment of oversight costs incurred by the Department shall be responsible for payment of application fees if such fees are unable to be recovered through the alternative cost recovery mechanism.

D. Permit Approval. If the Enforcement Agency finds that the permit application contains all the necessary information and the proposed work is in compliance with all applicable well standards as defined in this Chapter, the Enforcement Agency shall issue the applicant a comprehensive permit containing such conditions as are necessary to fulfill the purposes of this Chapter. The permit approval received from the Enforcement Agency is separate from any other permit or clearance that may be required by another governmental agency or entity.

E. Permit Conditions.

1. Special Conditions. When the Enforcement Agency issues a permit pursuant to this Chapter, it may condition the permit in any manner necessary to carry out the purposes of this Chapter. Conditions may include, but are not limited to: special construction requirements, special destruction requirements, greater setback distance requirements, greater grout seal thickness, greater annular space, special wellhead construction, or demonstration of adequate water quantity, or quality, or both, after well completion.

2. Proper Disposal of Drilling Fluids and Soil Cuttings. The applicant is required to see that safe and appropriate measures are taken in the handling and disposal of drilling fluids, soil cuttings, and other materials used or generated in connection with the permitted work. All drilling wastes must be controlled so as not to create conditions which violate applicable local, State and federal regulations. Discharge of drilling wastes into the sanitary sewer or storm drain is prohibited unless authorized by the Sacramento County Department of Public Works. This provision does not modify the measures for proper handling, storage, and disposal of hazardous waste set forth in the California Health and Safety Code, Division 20, Chapter 6.5 (Hazardous Waste Control) and by the California Code of Regulations, Title 22, Division 4.5 (Environmental Health Standards for the Management of Hazardous Waste).

3. Mud Pits. Mud pits created to confine drilling fluids shall be maintained during the well drilling operation so as not to be a nuisance. It shall be the applicant's responsibility to see that the mud pit is properly evacuated, or backfilled, or both evacuated and backfilled upon completion of the job.

4. Abandoned Wells. As a condition of well construction, modification, repair, inactivation, or destruction permits, and of pump installation, repair, or replacement permits, any abandoned wells on the property shall be destroyed or permitted for inactive status in accordance with standards provided in this Chapter.

5. Posting of Permit. Except in the case of an inactivation permit, it shall be the responsibility of the applicant to maintain a copy of this permit at the work site during all stages of permitted activities.

F. Permit Denial. The Enforcement Agency shall deny an application for a permit if:

1. The applicant is not a person authorized to perform the work as provided by this Chapter;

2. The permit application is incomplete;

3. The proposed work does not meet the standards adopted by this ordinance; ~~or~~

4. Issuance of a permit does not fulfill the purpose of this Chapter; or

5. The applicant is delinquent in payment of fees for any other project subject to regulation under this Chapter.

G. Permit Expiration. The applicant shall either complete the work authorized by the permit within one year of the date of issuance (except for well inactivation permits, which have a two-year term), or forfeit permission to complete the work specified in the permit. If there have been exceptional circumstances, the Enforcement Agency may grant the applicant an extension. A fee equal to twenty percent (20%) of the original permit fee shall be paid in connection with a one-time extension, for the term of the original permit, of any permit granted under this Chapter. Such an extension shall be in writing and may contain additional permit conditions. Upon the expiration of the permit, no further work shall be done unless and until the applicant has received an extension or a new permit.

H. Inactivation Permits. An inactivation permit must be obtained for any well which has not been used for a period of one year, but which the owner intends to use again. Any such well which has not been permitted for inactive status by the Enforcement Agency is considered to be abandoned or permanently inactive and must

be destroyed in accordance with applicable Department of Water Resources' standards, pursuant to the California Health & Safety Code, Section 115700(e). The term of a well inactivation permit shall be two years. Inactivation permits must be renewed until the well owner obtains a well repair or well destruction permit and completes the well repair or well destruction within the term of that permit. In addition to any conditions specified in the permit pursuant to Section 6.28.030(E)(1), the applicant must maintain the well in such a way that the following requirements are met:

1. The well shall not allow impairment of the quality of water within the well and groundwater encountered by the well.

2. The top of the well and the well casing shall be provided with watertight covers that are secured by locks or by other means to prevent their removal without the use of equipment or tools, to prevent unauthorized access, to prevent a safety hazard to humans and animals, and to prevent illegal disposal of wastes in the well. A pump motor, angle drive, or other surface feature of the well, when in compliance with the above provisions, shall suffice as a cover.

3. The well shall be marked so as to be easily visible and located, and labeled so as to be easily identified as a well.

4. The area surrounding the well shall be kept clear of brush, debris, and waste materials.

SECTION 4. Section 6.28.040 of Chapter 6.28, Title 6, of the Sacramento County Code is hereby amended to read as follows:

6.28.040 Water Well Standards.

The following water well standards have been designed to meet or exceed the water well standards contained in the Department of Water Resources' Bulletins 74-81 and 74-90. All community domestic wells, as a minimum, shall be sited and constructed in accordance with the California Waterworks Standards (California Code of Regulations, Title 22, Division 4, Chapter 16), which are hereby incorporated by reference.

A. Well Construction

1. Well Location With Respect To Pollutants and Contaminants and Structures.

a. Separation. All wells must be located an adequate horizontal distance from known or potential sources of pollution or contamination, as specified in the following table:

POLLUTION SOURCE	SETBACK
Any sewer line (sanitary, industrial, or storm; main or lateral)	50'
Watertight septic tank	100'
Leach lines	100'
Deep trench	100'
Leaching pit	150'
Stream, ditch, drainage course	50'

Animal/fowl enclosure	100′
Pond or lake	50′
Hazardous materials tank	150′

Lesser separation distances may be approved by the Enforcement Agency on a case-by-case basis where physical conditions preclude compliance with the specified minimum separation distances and where special means of protection are provided.

b. Gradients. Where possible, a well shall be located up the groundwater gradient from potential sources of pollution or contamination. Consideration should be given to the fact that the gradient near a well can be reversed by pumping (see Bulletin 74-81, page 28, Figure 3) or by other influences.

c. Flooding and Drainage. New water wells and related appurtenances should be located above the Base Flood Elevation (BFE) as established by the Sacramento County Department of Water Resources. If the well must be installed below the BFE, the following conditions shall apply:

(1) The wellhead must be watertight. This includes chlorination ports, electrical connections, sounding tubes, and any other connections or devices that may provide an avenue for entry of flood water into the aquifer.

(2) The pressure tank, electrical box, air vent, and other devices subject to flood damage or flood water intrusion shall be located above the BFE.

(3) To prevent floodwater from entering the aquifer in the event of a water line break, an approved check valve shall be installed on the main water line within three feet of the wellhead. Surface drainage shall be directed away from the well.

d. Accessibility. All wells shall be located an adequate distance from buildings and other structures to allow access for well modification, maintenance, repair, and destruction, unless otherwise approved by the Enforcement Agency.

2. Sealing the Upper Annular Space.

a. Minimum Depth of Annular Surface Seal. The annular surface seal shall extend from ground surface to a depth of at least fifty (50) feet and shall anchor in a satisfactory, impervious stratum. This depth is hereafter referred to as the "minimum annular seal depth."

(1) Shallow Groundwater. Exceptions to the minimum seal depth may be made for shallow wells at the approval of the Enforcement Agency, where the water to be produced is at a depth less than fifty (50) feet. In no case shall an annular seal extend to a total depth less than ten (10) feet below land surface.

(2) Vaults. At the approval of the Enforcement Agency, the top of an annular surface seal and well casing may be below ground surface where traffic or other conditions require, if the seal and casing extend to a watertight and structurally sound subsurface vault, or equivalent feature. In no case shall the top of the annular surface seal be more than four feet below ground surface. The vault shall extend from the top of the annular seal to at least ground surface. Vaults are prohibited for community domestic wells.

b. Sealing Conditions. The following requirements are to be observed for sealing the annular space. (For wells situated in circumstances different from those described below, the sealing conditions shall be as prescribed by the Enforcement Agency.)

(1) Wells Drilled in Unconsolidated, Caving Material. An oversized hole, at least four inches greater in diameter than the outside diameter of the well casing, shall be drilled and a conductor casing (such as hollow stem augers) temporarily installed to at least the minimum annular seal depth. Permanent conductor casing may be used if it is installed in accordance with subsections (A)(2)(b)(3) [WELLS DRILLED IN SOFT CONSOLIDATED FORMATIONS] and (A)(2)(b)(5) [GRAVEL PACKED WELLS WITH CONDUCTOR CASING], below, and if it extends at least to the minimum annular seal depth.

Temporary conductor casing shall be withdrawn as sealing material is placed between the well casing and borehole wall (see Bulletin 74-81, page 31, Figure 4A). Sealing material shall be placed at least to the minimum annular seal depth. The sealing material shall be kept at a sufficient height above the bottom of the temporary conductor casing as it is withdrawn to prevent caving of the borehole wall.

Temporary conductor casing may be left in place in the borehole after the placement of the annular seal only at the approval of the Enforcement Agency on a case-by-case basis.

(2) Wells Drilled in Unconsolidated Material with Significant Clay Layers. An oversized hole, at least four inches greater in diameter than the outside diameter of the well casing, shall be drilled to at least the minimum annular seal depth, and the annular space between the borehole wall and the well casing shall be filled with sealing material in accordance with subsection (A)(2)(a) [MINIMUM DEPTH OF ANNULAR SURFACE SEAL], above (see Bulletin 74-81, page 31, Figure 4B). If a significant layer of clay or clay-rich deposits of low permeability is encountered within five feet of the minimum annular seal depth, the annular seal shall be extended at least five feet into the clay layer. If the clay layer is known to be less than five feet in total thickness, the clay layer shall not be fully penetrated.

If caving material is present within the minimum annular seal depth interval, a temporary conductor casing shall be installed to hold the borehole open during well drilling and placement of the casing and annular seal, in accordance with the requirements of subsection (A)(2)(b)(1) [WELLS DRILLED IN UNCONSOLIDATED CAVING MATERIAL], above. Permanent conductor casing may be used if it is installed in accordance with subsections (A)(2)(b)(3) [WELLS DRILLED IN SOFT CONSOLIDATED FORMATIONS] and (A)(2)(b)(5) [GRAVEL PACKED WELLS WITH CONDUCTOR CASING], below, and it extends to at least the minimum annular seal depth.

(3) Wells Drilled in Soft Consolidated Formations (Extensive Clays, Sandstones, etc.). An oversized hole, at least four inches greater in diameter than the outside diameter of the well casing, shall be drilled to at least the minimum annular seal depth. The space between the well casing and the borehole shall be filled with sealing material to at least the minimum annular seal depth (see Bulletin 74-81, page 31, Figure 4C).

If a permanent conductor casing is to be installed to facilitate the construction of the well, an oversized hole, at least four inches greater in diameter than the outside surface of the permanent conductor casing, shall be drilled to the bottom of the conductor casing or to at least the minimum annular seal depth, and the annular space between the conductor casing and the borehole wall shall be filled with sealing material.

In some cases, such as in cable tool drilling, it may be necessary to extend permanent conductor casing beyond the required depth of the annular surface seal in order to maintain the borehole. Sealing material is not required between conductor casing and the borehole wall other than the minimum annular seal depth or the depth specified in subsection (A)(6) [SEALING-OFF STRATA], below.

(4) Wells Situated in "Hard" Consolidated Formations (Crystalline or Metamorphic Rock). An oversized hole shall be drilled to the minimum annular seal depth and the annular space shall be filled with sealing material. If there is significant overburden, a conductor casing may be installed to retain it. If the well is to be open-bottomed (lower section uncased), the casing shall be seated in the sealing material (see Bulletin 74-81, page 33, Figure 5A).

(5) Gravel Packed Wells With Conductor Casing. An oversized hole, at least four inches greater in diameter than the conductor casing, shall be drilled to the minimum annular seal depth, and the annular space between the conductor casing and the borehole shall be filled with sealing material. In this case, the gravel pack may extend to the top of the well, but, to prevent contamination by surface drainage, a welded cover shall be installed over the top in the space between the conductor casing and the well casing (see Bulletin 74-81, page 33, Figure 5B).

(6) Gravel Packed Wells Without Conductor Casing. An oversized hole, at least four inches greater in diameter than the well casing, shall be drilled to the minimum annular seal depth, and the annular space between the well casing and the borehole shall be filled with sealing material. If gravel fill pipes are installed through the seal, the annular seal shall be of sufficient thickness to assure that there is a minimum of two inches between the gravel fill pipe and the borehole wall. The gravel pack shall terminate at the base of the seal (see Bulletin 74-81, page 33, Figure 5C). If a temporary conductor casing is used, it shall be removed as the sealing material is placed.

(7) Converted Wells. Wells converted from one use to another, particularly those constructed in prior years without annular seals, shall have annular seals installed to the minimum annular seal depth and at the thickness described in subsection (A)(2)(e) [RADIAL THICKNESS OF SEAL], below.

(8) Wells that Penetrate Zones Containing Poor-Quality Water, Pollutants, or Contaminants. If geologic units or fill known to contain poor-quality water, pollutants, or contaminants are penetrated during drilling, and the possibility exists that poor-quality water, pollutants, or contaminants could move through the borehole during drilling and well construction operations and significantly degrade groundwater quality in other units before sealing material can be installed, then precautions (e.g., conductor casing, borehole liners, special drilling equipment, etc.) shall be taken to isolate zones containing poor-quality water, pollutants, or contaminants during drilling and well construction operations.

c. Conductor Casing. For community water supply wells, the minimum thickness of steel conductor casing shall be 1/4 inch for single casing, or a minimum of No. 10 U.S. Standard Gage for double casing. Steel used for conductor casing shall conform to the specifications for steel casing described in subsection (A)(5) [CASING], below.