



United States Department of the Interior
NATIONAL PARK SERVICE
Intermountain Region Hydrologist - Southwest
7660 East Broadway Blvd. # 303
Tucson, Arizona 85710
January 21, 2004



Ms. Barbara Alberti, Resources Program Manager
Coronado National Memorial
4101 East Montezuma Canyon Road
Hereford, Arizona 85615

Dear Barbara,

This letter is a follow up to my visit to Coronado National Memorial on January 7, 2004, when Henry Ruiz and I conducted an inventory and measurements of wells in preparation for capping open wells and assessing other well-related needs. Table 1 (pages 6 and 7) is an update of the file you provided me earlier of well data at Coronado National Memorial. Figure 1 (after page 7) illustrates the location of wells from Table 1 located in the Zalesk Ranch area. Figure 2 shows the location of wells from Table 1 located in the Montezuma Ranch area. Wells not included on either figure include the Headquarters Well, Brown's Allotment Well, Sparkes #1, the Forest Service Well, and all wells lacking GPS coordinates in the file.

In Table 1, please note that I have amended some of the legal locations to conform with the locations for these wells listed in the Arizona Department of Water Resources (ADWR) Wells 55 database. I have also included information from the database about the casing type for each registered well, although all of the wells have steel casing near the surface, including those identified as having plastic or PVC casing in the database. Two of the wells listed in Table 1 are still listed twice in the database as indicated by the duplicate registration numbers in the table. A review of the database showed that the other duplications on the original table have been amended and that those wells are now listed only under the registration numbers shown in Table 1.

Following the field review, I have compiled a list of wells with recommendations for capping, abandonment, or other action. This list will serve as a starting point for planning future activities. The following sections provide additional details about well capping, abandonment and other recommended actions.

Well capping

A review of Arizona regulations indicates that the following will be required:

- Submit a Notice of Well Capping (DWR 55-39) form to ADWR within five (5) days after capping any well. There is no fee for capping a well.

Table 2 summarizes the wells recommended for capping. I am prepared to order well caps as soon as I have an account number to charge them to. Although they do not strictly conform to regulations, ADWR has approved our use of the caps shown on the fax I sent earlier. I loaned some samples of these caps to Henry when I there last week. The cost for capping 16 wells is estimated at \$330. plus shipping for the following:

- 14 - 6 ½ inch ID caps at \$21.85 each
- 1 – 3 ½ inch ID cap at \$11.47 each
- 1 – 2 3/8 inch ID cap at \$10.28 each

In addition to the caps, 16 padlocks will be needed. The cost for each padlock was estimated by Henry at \$30., or \$480. for 16 locks. Henry will be responsible for obtaining the padlocks.

Table 2. Summary of wells recommended for capping.

Well	ADWR Wells 55 Registration Number	Casing Size (inches OD)
ACA1	55-510143	6.5
ACA2	55-509095	6.5
ACA3	55-510144	6.5
ACB2	55-507450	6.5
SX1	55-507448	6.5
SX3	55-507449	6.5
SX5	Not registered	6.5
SX6	Not registered	6.5
X2	55-509098	6.5
X3	55-509097	6.5
NE of water tank, NW of pool	55-509096	6.5
Lat 31 20 27, Long 110 13 35	55-649476	6.5
West of orchards?	55-649477	3.5
near East boundary?	55-649478	6.5
SW of north orchard near road curve near three corner fence posts	55-649479	6.5
Sparkes Well #1	55-629658	2 in ID pipe

Well abandonment

Well abandonment consists of “filling or sealing the well so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water” (Arizona Administrative Code R12-15-816(G)). The wells recommended for abandonment here include only dry wells.

Abandonment of any well requires legal authorization from ADWR. A review of Arizona regulations indicates that the following will be required:

- Submit a Notice of Intent to Abandon (NOIA) a well (form DWR 55-38) to ADWR.
- ADWR will respond to the NOIA with either a request for additional information or a notice indicating a granting or denial of authority to abandon.
- Within 30 days following the completion of abandonment, a Well Owner's Notice of Abandonment (form DWR 55-36) must be filed with ADWR.
- Within 30 days following the completion of abandonment, the well drilling contractor must file a Well Abandonment Completion Report with ADWR.

Wells at Coronado National Memorial recommended for abandonment are listed in Table 3.

Table 3. Summary of wells recommended for abandonment.

Well	ADWR Wells 55 Registration Number	Total depth (ft)	Status
SX2	55-507448	300	Dry
SX4	Not registered	125	Dry; pipe string inside casing needs to be extracted
X1	Not registered	134*	Dry

*Measured 134 ft but files indicate 218 ft

The NOIA requires provision of information about the planned abandonment, including (ADWR Well Abandonment Handbook):

- a well construction diagram illustrating existing features and proposed abandonment specifications
- owner's best assessment of type and condition of the well casing
- a description of the method of abandonment
- a description of the method of emplacing the sealing or fill materials
- well location information

All abandoned wells must have the upper 20 feet securely sealed both inside and outside the casing. I believe that the wells at Coronado National Memorial identified for abandonment will not require the standard abandonment method, involving perforation of the casing to 20 feet above the highest historical water level and complete filling with grout or cement. Since these wells do not penetrate aquifers or have gone dry, and no vadose zone contamination issues are present, I believe that they will qualify for the less expensive abandonment method Alternative 1, described in the ADWR Well Abandonment Handbook. Alternative 1 involves filling the well with cement, grout, or clean fine sand, and does not require perforating the casing at depth. However, surface sealing is required for all wells, and the dry ranch wells will require perforation of the casing in place in the top 20 ft (using a mill's knife or similar), followed by injection of a cement grout plug extending from a minimum of 20 ft below land surface to the top of the casing. The work must be conducted by a well driller licensed in the State of Arizona.

I am able to assist in the preparation of the required forms to initiate the well abandonment process, identification of a driller for development of a plan and an estimate, or to develop a proposed abandonment plan and submit requests for bids to several drillers. Once ADWR has completed a substantive review of the plans submitted in the NOIA and determined that they comply with the well abandonment rule, a well abandonment authorization card will be issued, permitting the abandonment work to proceed.

Since the well abandonment process involves a greater investment than does well capping, it may be desirable to cap the wells slated for abandonment until funds are available for completing the process. This would add two locks and two 6 ½ inch ID caps to the supplies needed (well SX4 cannot be capped in its current condition). If funds are currently available, we can proceed with abandonment at your convenience.

Other actions

In addition to the activities outlined above, Table 4 summarizes other actions that are recommended at this time.

Table 4. Other recommended well-related activities.

CORO Well Designation	ADWR Wells 55 Registration Number	Total depth (ft)	Recommended action
ACB1	55-084460	300	Pull pipe and pump, cap
ACA4	55-510145	340	Evaluate as fire suppression water supply and install surface seal
Baumkirchner #2	55-633157	90*	Test water quality; evaluate potential for supplementing potable water supply to park; develop plan to augment park supply if needed
Sparkes Well #2	55-629659	365	Locate well and assess need for cap or surface seal
Forest Service Well	55-629141	141	Locate well, need additional information to assess status
Hazel's Well aka Mine Shaft Well	Not registered	?	Locate and assess need for capping

*depth according to Wells 55 registry; park file indicate 160 ft depth

Recommendations

The following summarizes recommended actions at this time:

- When funds are available, purchase and install caps and locks for the wells in Table 2 and Wells X1 and SX2
- Identify preferred approach to well abandonment and initiate process for wells listed in Table 3
- Plan for water quality testing of Baumkirchner #2
- Install a surface seal at Well ACA4
- Attempt to locate and label wells identified in Table 4 as in need of further assessment

This concludes a summary of recommended well-related activities at Coronado National Memorial. Please contact me if you have any questions regarding the items discussed above, and remember that I am available to assist you in conducting the actions listed above.

Yours truly,

Colleen Filippone

Cc: Mr. Henry Ruiz, Chief of Maintenance
Larry Martin, Water Resources Division

Colleen L. Filippone, Hydrologist
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Table 1. Coronado National Memorial summary of wells.

Legal Location	CORO Well Designation	ADWR Wells 55 State Reg. Number	Casing Type in Wells 55 Database	Casing Stickup (inches)	Casing Outer Diameter (inches)	Total Depth (ft)	DTW (ft toc) 2002	DTW (ft toc) 9/11/2003	DTW (ft toc) 1/7/04	Location and Comments	Action
D (24-21)17 ACB?*	ACA1	55-510143	Plastic/PVC	18.5	6.5	340.0	248		269.9	East of 2-story house, North of road	Cap
D (24-21) 17 ACB?*	ACA2	55-509095	Plastic/PVC	10.5	6.5	340.0	251	267.0	271.8	East of 2-story house, south of road	Cap
D (24-21) 17 ACB?*	ACA3	55-510144	Plastic/PVC	21.0	6.5	340.0	247			East of 2-story house south of ACA2	Cap
D (24-21) 17 ACB?*	ACA4	55-510145	Steel	32.0	8.5	340.0	242	258.0	268.6	East of 2-story house south of ACA3, Richard's Pump; need to seal/grout top of well at ground surface for ADEQ; pump is set at 296 ft;pumped 10 gpm for 1 hr with no change in water level	Surface Seal; test water quality; evaluate potential water supply for fire fighting
D (24-21) 17 ACB1	ACB1	55-084460	Plastic/PVC	22 (inside pipe)	~8.5 outside; 6-5/8 inside	300.0	149.5	No access	No access	Faucet NW of 2-story house, north of road; has a pipe string inside and probably a pump;	Pull pipe string and pump;cap
D (24-21)17 ACB2	ACB2	55-507450	Plastic/PVC	16.0	6.5	343.0	134		132.2	In drainage west of houses	Cap
D (24-21) 17 ACB	SX1	55-507448	Plastic/PVC	4.75	6.5	300.0	136	135.0	135.0	East side of cement feature	Cap
D (24-21) 17 ACB	SX2	55-507448	Plastic/PVC	0.0	6.5	300.0	136		dry	East side of cement feature;has a 3 in inner pipe within a 6.5 inch outer casing;inner pipe moves easily	Pull inner pipe and abandon
D (24-21) 17 ACB	SX3	55-507449	Plastic/PVC	21.0	6.5	320.0	136		134.8	Near three poles, south of SX2	Cap
D (24-21) 17 ACB	SX4		Not registered	5.0	6.5	124.4	dry		dry	Dry in drainage SE of SX3	Abandon
D (24-21) 17 ACB	SX5		Not registered	7.0	6.5		242.5	262.5	266.6	PVC cap, in drainage east of SX4	Cap
D (24-21) 17 ACB	SX6		Not registered	8.5	6.5		260	265.5	266.8	SW of SX3, south of drainage near fence	Cap
D (24-21) 17 ACB	X1		Not registered	5.0	6.5	134.0	dry		dry	Dry at 218 ft., next to water tank	Abandon
D (24-21) 17 ACB	X2	55-509098	Plastic/PVC	21.0	6.5	320.0	150		148.0	West of water tank, west of X1	Cap
D (24-21) 17 ACB	X3	55-509097	Plastic/PVC	17.0	6.5	340.0	148		148.0	West of water tank, west of X2	Cap
D (24-21) 17 ABC	(none)	55-509096	Plastic/PVC		6.5	310.0	153.0	153.0	Not located	NE of water tank, NW of pool	Cap
D (24-21) 17 DAC		55-649476	Steel		6.5	320.0			Not located	(Lat 31 20 27, Long 110 13 35)	Cap
D (24-21) 17 ACD		55-649477	Plastic/PVC		3.5	300.0			Not located	(west of orchards?)	Cap
D (24-21) 17 ADD		55-649478	Plastic/PVC		6.5	300.0			Not located	(near east boundary?)	Cap
D (24-21) 17 ADC	(none)	55-649479	Steel	12.0	6.5	320.0	>250		>301	SW of north orchard near road curve near three corner fence posts	Cap

Table 1. Coronado National Memorial summary of wells, continued.

Legal Location	CORO Well Designation	ADWR Wells 55 State Reg. Number	Casing Type in Wells 55 Database	Casing Stickup (inches)	Casing Outer Diameter (inches)	Total Depth (ft)	DTW (ft toc) 2002	DTW (ft toc) 9/11/2003	DTW (ft toc) 1/7/04	Location and Comments	Action
D (24-21) 17 BCB2	Baumkirchner #2	55-633157	Steel		6.5	90.0	38		No access	Park files indicate well depth 160 ft; has pump & 3,000 gal tank, best potential for supplementing park water supply	Evaluate potential for potable supply in future; test water quality
D (24-21) 17 BCB3	Baumkirchner #3	55-633158	Steel	12.5	6.5	125.0	unknown		No access	USGS metered with In Situ miniTroll; needs a 3/4 in plug	Plug hole
D (24-21) 17 cdd	Border Well Coronado Well 4	55-633159 55-629142	Steel	14.0	12.5	758.0	624 ft in 1975	no access	No access	Capped with flat welded plate, west side of East Forest Lane, north of Border; has a lot of iron in water; south of border fenceline	No action needed
D (24-21) 18 BCB	Headquarters Well	55-633156 55-629139	Steel	45.0	8.5	97.9	37.5		60 by air method; 48.7 by tape	Main park well; 10 gpm pump; usually pumps ~4-5 gpm per Henry Ruiz	No action needed
D (24-21) 18 BDA	Forest Service Well	55-629141	Steel		5.5	140.6	dry		Not located	SE of old cattle guard, weld broken on cap, dry at 21 ft.	Cap or abandon? Need more information
D (24-20) 12 BBC*	Sparkes Well #1	55-629658	No casing	~1	2 in ID pipe	28.0	6.0	9.7	9.6	Across drainage at end of pavement; hand-dug well looks like a spring box; has large concrete plug for access	Cap 2 in pipe
D (24-21) 8 cdb	Brown Allotment Well	55-629140	Steel		6.5 + collar	115.0	no access	no access	No access	At windmill and corral on Joe's Spring Allotment; water goes to tank then to drinker	No action needed
D (24-21) 17 bcb 1	Zalesk Well/ Baumkirchner #1		Not registered			130.0			Not located	has been filled in and destroyed, was not located in field survey of 1995	No action needed
D (24-20) 12	Sparkes Well #2	55-629659	Not registered		6.5	365.0			Not located	Reported drilled in 1890, no casing, possibly filled in	Locate if possible
D (24-20) 11 BAD	Hazel's Well aka Mine Shaft Well		Not registered						Not located	in water rights files	Locate and assess needs

*Legal locations marked with an asterisk indicate a change from the legal locations in the file you originally gave me. I have changed these to conform with the legal locations indicated in the ADWR Wells 55 database.

Figure 1. Wells at Zalesk Ranch, Coronado National Memorial.

- Ranch structures
- Water infrastructure
- Drainage
- Roads
- Wells
- Coro_bnd
- 25 ft Contours

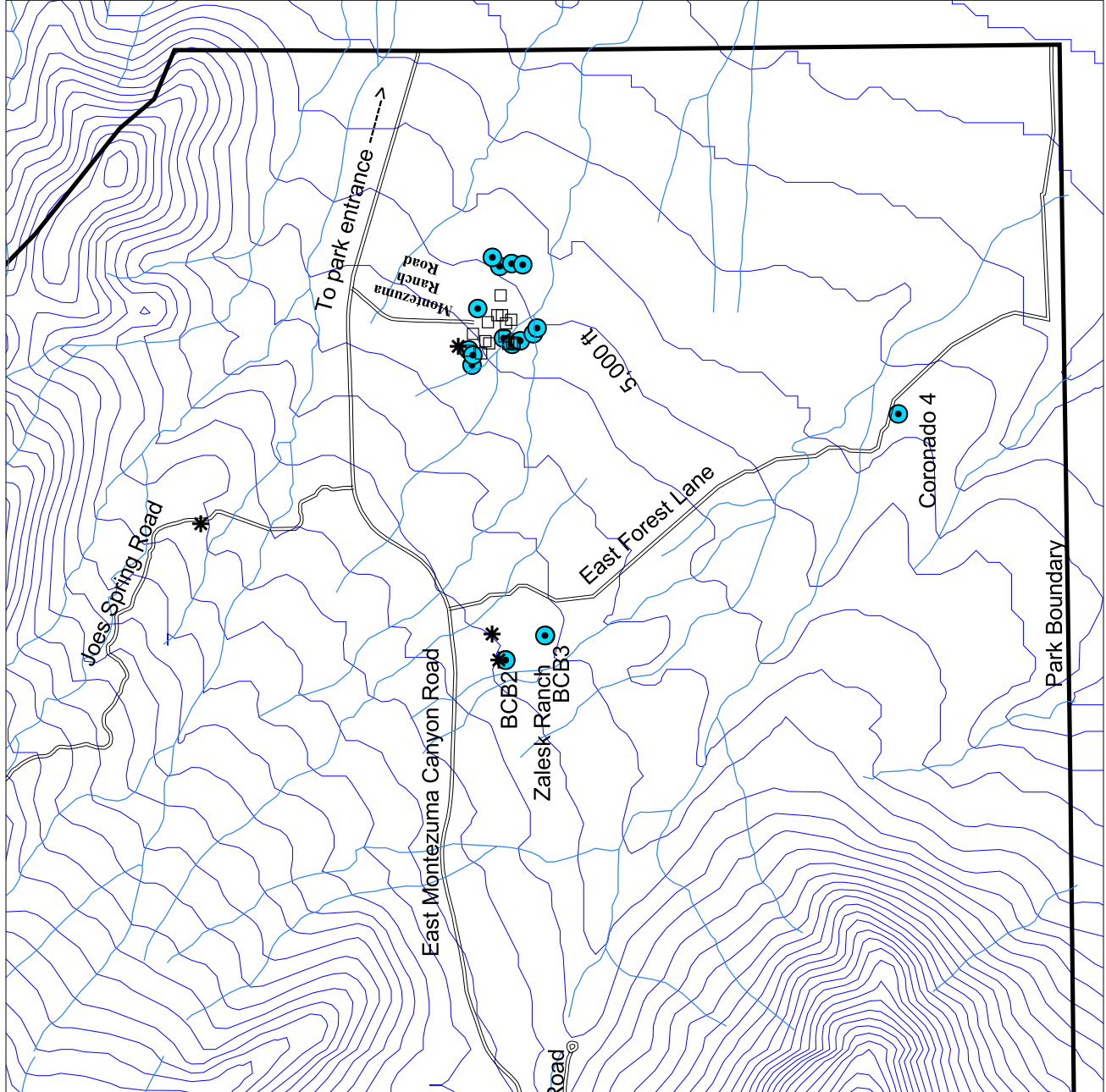
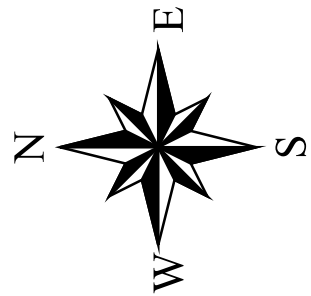


Figure 2. Wells at Montezuma Ranch, Coronado National Memorial.

