

STATE OF NEW MEXICO  
WATER QUALITY CONTROL COMMISSION

|                                  |   |                |
|----------------------------------|---|----------------|
| IN THE MATTER OF:                | ) |                |
| APPEAL OF SUPPLEMENTAL DISCHARGE | ) | Docket Nos.    |
| PERMIT FOR CLOSURE (DP-1341) FOR | ) | WQCC 03-12(A)  |
| PHELPS DODGE TYRONE, INC.        | ) | WQCC 03-13(A)  |
|                                  | ) | (Consolidated) |
| PHELPS DODGE TYRONE, INC.,       | ) |                |
|                                  | ) |                |
| Petitioner.                      | ) |                |
| _____                            | ) |                |

WRITTEN TESTIMONY OF WILLIAM OLSON

My name is William Olson, and I am the Bureau Chief of the Ground Water Quality Bureau of the New Mexico Environment Department (Department). I am presenting this written testimony on behalf of the Department in the proceeding on the appeal of the Supplemental Discharge Permit for Closure (Closure Permit), DP-1341, for the Phelps Dodge Tyrone, Inc. (Tyrone) open-pit copper mine (Tyrone Mine) located in Grant County, New Mexico. The matter is before the New Mexico Water Quality Control Commission (Commission) on remand from the New Mexico Court of Appeals. My written testimony is marked as **NMED Exhibit 1**.

**I. BACKGROUND AND EXPERIENCE**

I have a Bachelors of Science degree in Geology and a Masters of Science degree in Hydrology from the New Mexico Institute of Mining and Technology, and approximately 20 years of experience in working on ground water discharge permits and remediation of contaminated ground water under both New Mexico Water Quality Control Commission and New Mexico Oil Conservation Division rules and regulations.

I have held the position of Bureau Chief of the Ground Water Quality Bureau since October of 2004. As Bureau Chief, I am responsible for supervising and managing

environmental regulatory personnel of the Ground Water Quality Bureau's Pollution Prevention Section, Remediation Oversight Section, Mining Environmental Compliance Section, Superfund Oversight Section, and Grants and Planning Section. My duties include directing and approving the permitting and enforcement of discharge plans, and the investigation and abatement of contaminated soil and ground water pursuant to the New Mexico Water Quality Act and New Mexico Water Quality Control Commission regulations; investigation and remediation of contaminated properties pursuant to the Voluntary Remediation Act and Voluntary Remediation Regulations; investigation and remediation of abandoned sites in support of the U.S. Environmental Protection Agency (EPA) Superfund Program, and implementation of the Environment Department's responsibilities under the New Mexico Mining Act.

I previously served on the New Mexico Water Quality Control Commission as the designee of the New Mexico Oil Conservation Division for a period of approximately 13 years, and have currently been serving on the New Mexico Oil Conservation Commission as the designee of the Secretary of the Energy Minerals and Natural Resources Department since September of 2005.

A copy of my resume is marked as **NMED Exhibit 2**. It is accurate and up-to-date.

## **II. ADMINISTRATIVE RECORD**

The Department prepared an administrative record for this matter and filed it with the Commission on July 9, 2007. The record was prepared by my staff under my direct supervision. I have reviewed the overall content of the administrative record, and I am generally familiar with it. To the best of my knowledge it is accurate and complete.

The Department also prepared an index to the administrative record, which we filed with the Commission together with the record. The record is organized by discharge permit. There

are ten individual discharge permits for the Tyrone Mine: nine operation permits, and one closure permit. Within each permit, the record is further divided into up to six categories of documents: 1) correspondence; 2) monitoring reports; 3) miscellaneous reports; 4) reference documents; 5) financial assurance correspondence; and 6) financial assurance reports. Within each of these categories, the documents are entered in chronological order.

### III. INTRODUCTION

This hearing is fundamentally about protection of ground water resources in New Mexico. New Mexico is an arid state, with limited water resources. It is growing and developing rapidly, placing an increasing demand on those limited resources. New Mexican's obtain approximately 90 percent of their drinking water from ground water sources. It is therefore extremely important that we protect those resources. Towards that end, the Legislature enacted the Water Quality Act and subsequently the Commission, in 1977, adopted regulations to protect all surface and subsurface waters in New Mexico.

The Closure Permit is a permit issued by the Department on April 8, 2003, under the Water Quality Act, that addresses the closure of the Tyrone Mine south of Silver City, New Mexico. A copy of the Closure Permit is marked as NMED Exhibit 3. Tyrone appealed this permitting action to the Commission and, after a lengthy hearing, the Commission upheld the terms and conditions of the permit as issued by the Department. Subsequently, Tyrone appealed the Commission's action to the New Mexico Court of Appeals. On July 19, 2006 the New Mexico Court of Appeals in its decision captioned *Phelps Dodge Tyrone, Inc. v. New Mexico Water Quality Control Commission and New Mexico Environment Department* (No. 25,027) remanded the case to the Commission for further proceedings. On January 9, 2007 the Commission set this matter for hearing. Pursuant to the Commission's May 1, 2007 Corrected

Scheduling Order for Remand Proceedings and Appointment of Hearing Officer the scope of this hearing is limited to the determination of whether the Tyrone mine is a place of withdrawal of water for present or reasonably foreseeable future use, within the meaning of the Water Quality Act, NMSA 1978, §§ 74-6-1 to 74-6-17, and the Commission's regulations, 20.6.2 NMAC.

The language "place of withdrawal of water for present or reasonable foreseeable future use" appears in section 74-6-5(E)(4) of the Water Quality Act whereby a permit must be denied if the discharge would cause or contribute to water contaminant levels in excess of any state or federal standard. According to section 74-6-5(E)(3) NMAC: "determination of the discharges effect on ground water shall be measured at any place of withdrawal of water for present or reasonably foreseeable future use." The reference to a "place of withdrawal of water for present or reasonably foreseeable future use" also appears in the Commission's Regulations, for example at section 20.6.2.3109.C(2) NMAC.

However, the Water Quality Act and the Commission Regulations as they exist today do not define the term "place of withdrawal of water for present or reasonable foreseeable future use" nor do they give direction as to how to determine where this area exists. In my following testimony I will describe objective criteria that the Commission should use to determine whether a particular discharge site is a place of withdrawal of water for present or reasonably foreseeable future use. I will also offer the Department's opinion that based upon a review of available information applicable to these criteria that the Tyrone Mine in its entirety is a place of withdrawal of water for both present and reasonably foreseeable future use.

#### **IV. CRITERIA FOR DETERMINING PLACE OF WITHDRAWAL**

##### **A. DEPARTMENT'S PROPOSED CRITERIA**

The starting point in this proceeding is for the Commission to adopt criteria for

determining whether the Tyrone Mine is a place of withdrawal of water for present or reasonably foreseeable future use within the meaning of section 74-6-5(E) of the New Mexico Water Quality Act and the Commission Regulations. The Department filed with the Commission a List of Proposed Criteria on March 23, 2007. The Department proposed seven general criteria:

- (1) Site hydrology and geology;
- (2) The quality of ground water prior to any discharge from that facility;
- (3) Past and current land use in the vicinity;
- (4) Potential future land use in the vicinity;
- (5) Past and current water use in the vicinity;
- (6) Potential future water use in the vicinity; and
- (7) Population trends in the vicinity.

These are the factors that we believe are relevant and useful to the determination of whether there is a present or reasonably foreseeable future use of ground water at and around the Tyrone Mine. We selected relatively general, neutral criteria that would not be controversial and cover a broad range of issues that the Commission needs to consider in making these types of decisions

No one of these factors should be determinative on the issue by itself, but all of them should be considered, as may be appropriate.

I will now discuss each of the Department's seven proposed criteria.

1. *Site Hydrology and Geology*

The Department's first proposed criterion is site hydrology and geology. This criterion focuses on the general hydrologic and geologic properties and setting of the place where the discharge occurs.

The geology of a site provides an evaluation of the rock and sediment type and water bearing formations, including physical properties that affect the ability of a formation to be utilized as source of water such as porosity and the extent and degree of fracturing. Geology can affect the quality of the water, the rate at which it can be pumped, and the rate of recharge of the aquifer, among other things.

Hydrology addresses the properties and extent of different water-bearing formations, or aquifers existing in the general area of the site, their interrelationships and whether they are interconnected. Hydrology also considers the different ground water basins at the site and in the area. For example, at the Tyrone Mine there are two aquifers: the shallow alluvial aquifer, and the generally deeper regional aquifer. These aquifers are interconnected. Furthermore, the Tyrone Mine straddles two ground water basins, the Gila Basin and the Mimbres Basin, both of which are designated as declared basins by the State Engineer.

Site hydrology includes the quantity of water that can be pumped from a well at the site. Under the Commission's Regulations, ground water is defined as "the interstitial water which occurs in saturated earth material and which is capable of entering a well in sufficient amounts to be utilized as a water supply." 20.6.2.7.Z NMAC. At the Tyrone Mine, the regional aquifer yields a sufficient quantity of water for a continuous drinking water supply. The alluvial aquifer also yields sufficient water, at times, to be used as a water supply, particularly for agricultural purposes. Clint Marshall of my staff will testify in more detail on this issue.

Site hydrology also includes the depth to water table, the direction of groundwater flow, the rates of ground water flow and the rate of the recharge of the ground water aquifer. All other things being equal, a shallower water table has more utility as a water supply than a deeper one. At the Tyrone Mine, the regional aquifer ranges from a few feet to about 500 feet below the

ground surface, so it is readily accessible as a water supply. In addition, a water-bearing formation that has a higher transmissivity (i.e. a higher rate of flow) has more utility as a water supply and an aquifer that is recharged by good-quality water, and that has a relatively rapid rate of recharge, has more utility as a water supply. The regional aquifer at the Tyrone Mine is recharged from the Big Burro Mountains, and it is very good-quality water.

2. *Quality of Ground Water Prior to Any Discharge from that Facility*

The Department's second criterion is the quality of ground water prior to any discharge from that facility. Obviously, good-quality water has more utility as a water supply than poor-quality water.

An important consideration under this criterion is the level of total dissolved solids (TDS) in the ground water prior to discharge. If the ground water consistently contains greater than 10,000 milligrams per liter TDS, it is not subject to protection or abatement under the Commission Regulations. 20.6.2.3109.C(2) NMAC; 20.6.2.4103.B NMAC. Ground water that contains TDS approaching 10,000 milligrams per liter will have relatively less utility as a water supply, but is still amenable to treatment for subsequent beneficial uses.

Other water quality standards should also be considered under this criterion. For example, naturally-occurring arsenic or uranium might make ground water of less utility as a water supply. At the Tyrone Mine site, except for elevated levels of natural fluoride and manganese at certain locations, and large areas with water pollution as a result of mining discharges, the ground water is of a very high-quality.

It is essential under this criterion to look at water quality *before* the discharge from the permitted facility. Otherwise, the discharger can contaminate the ground water and then assert that the ground water is not protected, that it is no longer subject to permit conditions, and that it

is no longer subject to abatement requirements, because no one would ever use this contaminated ground water as a water supply. This would reward polluters of ground water because discharge permits issued under Commission regulations do not allow an operator to cause an exceedance of water quality standards. The Commission should reject any assertion that a determination of future use of ground water should be based upon current water quality after a discharge of water contaminants has degraded the ground water. To do otherwise would subvert the purposes of the Water Quality Act to prevent and abate water pollution.

3. *Past and Current Land Use in the Vicinity.*

The Department's third criterion is the past and current land use in the vicinity of the facility. The past and current land use gives an indication of present water use, and of potential future water use. Past and current land use at the Tyrone Mine, and in the vicinity of the mine, includes industrial, residential, and agricultural uses. These uses have necessitated a water supply for drinking, industrial and agricultural purposes.

4. *Potential Future Land Use in the Vicinity*

The Department's fourth criterion is the potential future land use in the vicinity of the facility. Future land use indicates the likelihood of future water use and future demand for ground water. For example, currently the post mining land use for the Tyrone Mine, designated under the New Mexico Mining Act, is industrial use and wildlife habitat. Industrial land use, at a minimum, will need drinking water for workers. I'd also like to point out that post-mining land use is not a fixed land status because under the Mining Act rules Tyrone can apply to change the post-mining land use at any time. William Brancard, Director of the Mining and Minerals Division, will be testifying about the post-mining land use designation for the Tyrone Mine.



5. *Past and Current Water Use in the Vicinity*

The Department's fifth criterion is the past and current water use in the vicinity of the facility. Past water use gives some indication of likely future water uses. Present water use indicates current places of withdrawal of water for use as sources of drinking water, and industrial and agricultural applications. There are currently drinking water wells at the Tyrone Mine and in the vicinity of the mine, as well as water wells used to supply water for agricultural purposes in the vicinity of the mine.

6. *Potential Future Water Use in the Vicinity*

The Department's sixth criterion is the potential future water use in the vicinity of the facility. Potential future water use indicates the demand that may be placed on existing water supplies. If demand is likely to exceed supply in the future, the site is more likely to be a place of withdrawal of water for future use. There is a consensus among the water resource experts who have looked at this issue that in the next 20 to 40 years the demand for water in the Silver City area will exceed the supply. Michael Johnson of the State Engineer's Office will discuss his study finding that the existing supplies in the area will not be able to meet future demands, and Craig Roepke of the Interstate Stream Commission will discuss his view, as a water resource manager, that the ground water in the vicinity needs to be protected for future use. Michael Wireman of the United States Environmental Protection Agency, Region 8 in Denver, will also testify that water from the Tyrone Mine is likely to be used in the future.

7. *Population Trends in the Vicinity*

The Department's seventh and final criterion is population trends in the vicinity of the facility. The population trend in the vicinity is indicative of foreseeable future demands on area water supplies and the likely need for sources of water to supply population demands.

Population has been fairly steadily increasing in Grant County over the past decade, and it is projected to continue to do so. The State Demographer from the University of New Mexico, Adelamar Alcantara, has run population projections for the Silver City area, for Grant County, and for the surroundings through 2060, and projects that population in those areas will continue to increase over time.

The Department recommends that the Commission adopt these criteria to determine whether the Tyrone Mine is a place of withdrawal of water for present or reasonably foreseeable future use in this case. These criteria can also be used to make similar determinations for other sites. In proposing these criteria, there are a few very important points I need to make regarding their application.

First, no one of these criteria should be determinative on the issue by itself. Each of these criteria should be considered as a whole, and given appropriate weight. Moreover, in some cases one or more of these criteria might be entitled to little or no weight, or might be inapplicable.

Second, while an aquifer might have relatively less utility for a water supply under one or more of these criteria, it could still have some utility, and therefore have a reasonably foreseeable future use.

Third, it is the Department's intent that application of these criteria will, in the vast majority of instances, lead to a determination that ground water has a present or reasonably foreseeable future use. Only in rare instances will ground water be found not to have a reasonably foreseeable future use. This is consistent with the intent and purpose of the Water Quality Act to protect state water resources by preventing and abating water pollution, and is necessary to meet the needs of New Mexico to protect its limited state water supplies now and into the future.

Finally, the burden is on the discharger to show that the site is not a place of withdrawal of water for present or reasonably foreseeable future use. Under the Commission's Regulations, the Department can approve a discharge permit only if the discharger demonstrates that the discharge will not result in an exceedence of standards at any place of withdrawal of water for present or reasonably foreseeable future use. 20.6.2.3109.C(2) NMAC. Additionally, in its June 10, 2004 Order affirming the Supplemental Discharge Permit, the Commission adopted a rebuttable presumption that all ground water with less than 10,000 milligrams per liter TDS "is protectable for present or reasonably foreseeable future use." (Conclusion of Law # 21.) The Court of Appeals did not disturb or overturn that conclusion.

**B. TYRONE'S PROPOSED CRITERIA**

The Department sees a number of problems with Tyrone's proposed criteria. Our overall observation is that Tyrone's proposed criteria have much more specificity for application to the Tyrone mine site than the Department's proposed criteria, and that specificity often weighs in Tyrone's favor. The Department's proposed criteria are more objective, general and neutral, although many of the issues proposed by Tyrone are potentially points of discussion under the framework of the Department's criteria. I will now address Tyrone's proposed criteria, pointing out some of the problems they present.

1. *Nature, extent, and history of permitted activities at the site to be closed.* The Department agrees that the nature, extent and history of activities at the site can be indicative of the past land use of the site and how the site became polluted. It is also relevant background information. However, it should not be a separate criterion.

2. *Land uses in the vicinity of the site to be closed and the site's proximity to established communities and their water supplies.* This proposed criterion is similar to the

Department's proposed criteria on present land and water use (Department's Criteria #3 and #5). The Department does not believe that the reference to "established communities," as opposed to a myriad of other land uses that necessitate a water supply, is necessary or appropriate. For example, ground water can be protected for future use by residences that are not within "established communities." In addition, "established communities" only considers existing land uses and does not contemplate future land uses.

3. *Land ownership status of the site to be closed and the surrounding area.* The Department does not believe this proposed criterion is relevant, except perhaps as an indicator of present and potential future land use. The identity of the land owner has little relevance to whether the ground water beneath the land has a reasonably foreseeable future use. Land can easily be transferred. Moreover, ground water belongs to the State, not to the land owner. It is not the private property of the land owner. Ground water is a public resource for which a landowner may apply to the State Engineer for the right to use it.

4. *Owner-imposed institutional controls on future uses of the site to be closed.* The Department does not agree that institutional controls -- whether imposed by the property owner or by some other party -- are a relevant consideration, and is opposed to the use of this criterion. We see several problems with using this as a criterion. I will discuss institutional controls in more detail later in my testimony.

5. *Zoning requirements or restrictions applicable to the site and surrounding areas.* The Department does not believe that zoning is relevant, except as an indication of future land use. Zoning ordinances can easily be changed. Also, land can be zoned for residential, commercial, industrial, or agricultural uses, but any of these uses necessitate a water supply regardless of the land zoning.

6. *Site-specific plans and comprehensive regional plans as they affect the foreseeable future uses of the site and surrounding areas.* The Department views such plans as relevant as indicators of potential future land or water use, but it is not necessary to include this as a separate criterion. Regional plans may be indicative of future uses whether or not they are "comprehensive." Moreover, such plans need not be in place for there to be a foreseeable future use. While the existence of a site-specific or regional plan would be indicative of future use, the lack of a site-specific or regional plan is not indicative that there is no future use because, in New Mexico, it is often the case that such plans do not exist when development occurs.

7. *Demographic projections of population growth or decline in the general area.* The Department agrees that this is an appropriate criterion; it is very similar to a criterion the Department has proposed (Department's Criterion #7).

8. *Site features and any closure/closeout permit conditions dictating site-related obligations protective of ground water.* Site features may be indicative of potential future land use. However, the Department does not agree that closure/closeout permit conditions are in any way relevant to whether there is a present or reasonably foreseeable future use of ground water. Closure/closeout permit conditions are put in place to protect ground water from water pollution, control sources or water contaminants and to abate water pollution caused by past discharge activities so it can be used in the future. The presence of permit closure obligations to protect and abate water pollution does not mean that the ground water has no future use.

9. *Past and current uses of ground water at the site and its surrounding areas.* This criterion is similar to one of the Department's proposed criteria (Department's Criterion #5).

10. *Hydrogeology and direction of ground water flow in the specific and general area.* This proposed criterion is very similar to one of the Department's proposed criteria (Department's Criterion #1.)

11. *Practicability of developing ground water in the area including consideration of supply and demand, economic factors, and technical feasibility.* This criterion is similar to one of the Department's proposed criteria (Department's Criterion #6) although Tyrone's criterion attempts to place limitations on the applicability of future uses.

12. *Legal and administrative constraints on future use of groundwater in the area.* The Department views this proposed criterion as very similar to Tyrone's proposed criterion #4, which is owner-imposed institutional controls. Again, the Department does not agree that institutional controls are a relevant consideration. I will discuss institutional controls in more detail later in my testimony.

13. *Accepted land use and water resource planning horizons.* The Department agrees that a planning horizon is appropriate in determining whether ground water has a reasonably foreseeable future use. However, for purposes of protecting ground water for future generations, the planning horizon should not be based on the relatively short planning horizons generally relied upon by municipal planners. I will discuss this issue later in my testimony.

14. *Whether new water development is reasonably foreseeable or merely "possible."* The Department does not agree that this is an appropriate criterion because it attempts to limit the discretion of the Commission in determining what is reasonably foreseeable.

#### C. TYRONE'S PROPOSED "POLICIES"

The Department does not believe that Tyrone's proposed policies are of much use in determining whether the Tyrone mine is a place of withdrawal of water for present or reasonably

foreseeable future use. Some of these asserted "policies" may be appropriate considerations in setting permit conditions, but they are of no relevance to the initial determination whether a discharge is at a place of withdrawal of water for present or reasonably foreseeable future use, and whether ground water at that place is protected. Also, some of Tyrone's "policies" represent factors that are outside the scope of or not consistent with the provisions in the Water Quality Act and are therefore inappropriate for consideration in this proceeding.

#### D. INSTITUTIONAL CONTROLS

As I mentioned earlier, the Department disagrees that the existence of institutional controls is a relevant criterion for determining whether there is a reasonably foreseeable future use of ground water. The Department opposes the adoption of such a criterion for several reasons.

The first reason that the Department opposes institutional controls as a criterion is that institutional controls often do not work. In 2005, the U.S. Government Accountability Office, or GAO, conducted a study of institutional controls at sites cleaned up under federal hazardous waste laws. The GAO investigated, among other things, the extent to which EPA ensures that institutional controls are implemented, monitored, and enforced. A copy of the GAO report, entitled *Hazardous Waste Sites: Improved Effectiveness of Controls at Sites Could Better Protect the Public*, is marked as NMED Exhibit 4. In the report, the GAO concluded that institutional controls were often not implemented in a timely manner. (*GAO Report* at pp. 28-29). GAO found that of 32 Superfund sites requiring institutional controls, at eight of those sites the institutional controls had not been implemented prior to deletion of the site from the National Priorities List, contrary to EPA policy. (*GAO Report* at p. 28). At two of these sites, no institutional controls were put in place at all. (*GAO Report* at p. 28). According to an EPA

manager that GAO interviewed, the failure to implement institutional controls occurred at least in part "because site managers lost track of the need to implement the institutional controls" before the site was deleted. (*GAO Report* at p. 28).

GAO also concluded that monitoring of institutional controls is not always adequate. (*GAO Report* at pp. 29-32). For example, at one site an institutional control prohibited the use of ground water without the prior written approval of EPA. Despite this prohibition, during a one-year period 25 million gallons of ground water was pumped from the site for use as drinking water without EPA's knowledge or approval, and EPA officials were not sure how long the unlawful pumping had been going on before then. EPA discovered the illegal pumping only because the Superfund statute mandates that if any waste remains at a site after cleanup, EPA must review the site every five years; EPA discovered the pumping during its five-year review. (*GAO Report* at p. 29). At sites where parties other than EPA were responsible for monitoring institutional controls, GAO found that monitoring inadequacies were particularly prevalent. GAO examined 26 sites at which liable parties, site owners, or state or local government entities were charged with monitoring the controls. At none of these sites did monitoring include a specific check on whether site institutional controls were in place. (*GAO Report* at p. 31). At four of these sites, monitoring had failed to reveal that institutional controls that should have been in place were not. (*GAO Report* at p. 31). Further, at four sites EPA managers indicated that the parties responsible for monitoring either had not performed the required monitoring or were unable to provide documentation that it was performed. (*GAO Report* at p. 31). At one site, a local official failed to perform monitoring even though there was significant evidence of trespassing at the site. (*GAO Report* at pp. 31-32).

The GAO report offered a word of caution: "Relying on institutional controls as a major



component of a selected remedy without carefully considering all of the applicable factors -- including whether they can be implemented in a reliable and enforceable manner -- could jeopardize the effectiveness of the entire site remedy.” (*GAO Report* at p. 27).

The Environment Department has experienced similar problems with institutional controls at sites here in New Mexico. One example is the Cleveland Mill site, a former hard rock mine and mill facility and a federal Superfund site in Grant County, New Mexico. Cleanup of the Cleveland Mill site was completed in 1998. Acidic tailings were neutralized and disposed of on-site in a limestone cell, and a multi-layer cover was placed over the cell. In addition, restrictive covenants were placed on the property to prevent property owners from disturbing the cover and the underlying waste material, and to restrict use of ground water. EPA is currently conducting its second five-year review of that site. To assist EPA in its five-year review, my staff interviewed local officials to determine whether the institutional controls were monitored and enforced. My staff interviewed the Ordinance Officer for Grant County, and the Code Enforcement Officer for Grant County. Neither of these officials was aware that waste material had been disposed of in a cell on the site, or that the site was subject to land use restrictions. The latter official also stated that the County does not have any ordinances that would allow it to enforce such restrictions. A copy of these two “Five-Year Review Interview Records” is marked as **Exhibit 5**.

Another example of institutional controls that have been ineffective is the Sandia Battery site, formerly a car and truck battery recycling facility located in the Town of Bernalillo, New Mexico that was considered for designation as a federal Superfund site. In 1997, Ground Water Quality Bureau staff conducted an Integrated Assessment of the site for purposes of the Superfund process. Although the site was in an area zoned for industrial use, a family of two

adults and four children were living in a mobile home on the site. The New Mexico Department of Health determined that one of the children had elevated blood-lead levels. A copy of the Integrated Assessment for Sandia Battery Manufacturing Company is marked as **Exhibit 6**. Zoning laws are a form of institutional controls, and are included in one of Tyrone's proposed criteria.

Still another example is the Placitas Landfill in Sandoval County, New Mexico. Despite a recorded plat showing the location of a closed sanitary landfill, a subdivision was developed over a portion of the landfill. Two domestic water supply wells were installed within the footprint of the landfill. Three septic tank permits were issued for lots located over the landfill. In addition, waste from the landfill was encountered during construction of the residences on four of the lots. Several hundred cubic yards of municipal waste had to be excavated and removed for off-site disposal. A copy of the plat map showing the location of the landfill is marked as **NMED Exhibit 7**. A copy of the letter I sent to the affected residents is marked as **NMED Exhibit 8**.

The second reason we oppose a criterion based on institutional controls is that the controls cannot always be enforced. Enforcing institutional controls against subsequent purchasers of property is particularly problematic. For example, Tyrone might agree to place restrictions on its mine property preventing the installation of water supply wells, and it might agree that the State can enforce those restrictions. If Tyrone later sells the property, it might even place a restriction in the deed or sale contract. However, it is highly questionable whether the State would have any legal right to enforce that restriction against the purchaser of the property, or against any subsequent purchaser in the chain-of-title. For the past three years, the New Mexico Legislature has considered legislation to make environmental covenants

enforceable, but it has not enacted any such legislation. The GAO, in its report on institutional controls, recognized this problem, observing that "State property laws, which traditionally disfavor restrictions attached to deed and other land use restrictions in order to encourage the free transferability of property, can hinder EPA's ability to implement and enforce institutional controls." (*GAO Report* at p. 33).

The third reason we oppose institutional controls as a criterion is that it is counter to the purpose of the Water Quality Act, which is to protect ground water. This is an important point. It would be unacceptable to simply put into place institutional controls restricting the use of ground water, and then rely on those controls to conclude that the water will never be withdrawn for domestic or agricultural use and it is therefore not protected. That approach would allow any property owner to record a water use restriction on its property, and then pollute the groundwater up to his property line with impunity. The approach would be contrary to the entire purpose of the Water Quality Act, and the Act's permitting and abatement programs.

A fourth reason we oppose such a criterion is that it is really improper for a property owner to place restrictions on the use of underlying ground water. The ground water in New Mexico belongs to the State for use by the public, not to the property-owner. The property owner has no legal right to own the ground water beneath his property. New Mexico differs from many states in this regard. Because ground water in New Mexico is a public resource, it should be protected for the public.

Nevertheless, the Department does believe that institutional controls can serve a purpose. But it is a limited one. And it is not relevant to the determination of a place of withdrawal for future use. Institutional controls might be used where groundwater has already become contaminated above standards, and despite active abatement measures it will take a significant

period of time to abate that ground water until it meets standards. Likewise, institutional controls might be used where ground water has become contaminated, and the Commission has made a determination that achieving standards is technically infeasible and alternate abatement standards have been approved. In these narrow circumstance, it makes sense to try to restrict access to that water through institutional controls imposed by the Office of the State Engineer or other government agency having such authority. Despite the shortcomings with institutional controls, they can be helpful in limiting access to contaminated ground water while undergoing abatement. But the existence of such institutional controls has no bearing on whether the ground water is protected under the Water Quality Act.

Even the requirement in the Closure Permit that Tyrone must pump the water from the Main Pit and treat it for a minimum of 100 years is potentially problematic. We do not believe it is possible to ensure that the pumping will continue for 100 years. That is another reason why source control measures at the Tyrone Mine are essential.

#### E. PLANNING HORIZONS

The term "foreseeable future" sets out a planning horizon over which considerations must be made regarding potential impacts on ground water and potential future withdrawals of water for use. However, neither the Water Quality Act nor Commission regulations define this term.

The Department proposes that the Commission define "foreseeable future" as a time period of not less than 200 years in the future. This definition was previously adopted by the New Mexico Oil Conservation Commission on May 10, 1988 in Oil Conservation Commission Order R-3221-D, which is marked as NMED Exhibit 9. As background, Order R-3221 was originally adopted by the Oil Conservation Commission on May 1, 1967 to prohibit the disposal of oil field brine produced during oil and gas production into unlined pits in Southeastern, New

Mexico. Order R-3221 was subsequently amended several times with Order R-3221-D adopted in 1988 to set the standard hearing procedures to be utilized by oil and gas operators seeking exceptions to the prohibition on disposal in unlined pits. During the hearing, evidence was presented from the Office of the State Engineer (see NMED Exhibit 9) regarding what ground waters in New Mexico are to be protected. The State Engineer used the term "foreseeable beneficial use" in describing protectable ground waters. In its final R-3221-D hearing order the Oil Conservation Commission determined that "Although not formally defined the term 'reasonably foreseeable' has been taken to mean a time period of not less than 200 years in the future, and in other instances to mean much longer (thousands of years)" (See NMED Exhibit 9 - Paragraph (2) of Legal Considerations on page 1 of Exhibit A of Order R-3221-D).

The New Mexico Oil Conservation Division has used and still uses this defined "reasonably foreseeable" planning horizon as the time frame over which permitting considerations are made, including those delegated permitting actions it conducts under Commission regulations and the Water Quality Act. The New Mexico Oil Conservation Division is a sister constituent agency of the Department on the Commission. In order to maintain consistency between the Department and the Oil Conservation Division in enforcing Commission regulations, and because the Oil Conservation Division's planning horizon is appropriate for the protection of ground water from contamination, the Department proposes that the Commission adopt a definition of "foreseeable future" as a time period of not less than 200 years in the future, and in some circumstances much longer.

A minimum time period of 200 years is entirely appropriate for the Tyrone Mine. Evidence in the record, including geochemical modeling and geochemical analysis that Tyrone performed, indicates that the stockpiles at the Tyrone Mine will continue to generate acid rock

drainage for 200 or 300 years. Some of that testimony has been pulled from the record and marked as NMED Exhibit 10. Indeed, Condition 36 of the final Closure Permit provides that Tyrone must design, construct, and maintain a water treatment system to treat contaminated mine water with a minimum useful life of 100 years; Tyrone did not challenge this permit condition.

**V. DETERMINATION OF PLACE OF WITHDRAWAL OF WATER**

**A. TYRONE MINE IS A PLACE OF WITHDRAWAL OF WATER**

The second task for the Commission in this proceeding is to determine, based on the criteria that the Commission adopts, whether the Tyrone Mine is a place of withdrawal of water for present or reasonably foreseeable future use.

It is the Department's position that the Tyrone Mine, in its entirety, is a place of withdrawal of water for present or reasonably foreseeable future use. The Department reaches this conclusion based on the eight criteria that I summarized earlier in my testimony. The other Department witnesses will be presenting evidence to support the Department's position.

It is also my professional opinion that the Tyrone Mine in its entirety is a place of withdrawal of water for present or reasonably foreseeable future use.

The Tyrone Mine site is currently used as a place of withdrawal of water for present use. There are several drinking water wells currently in use on the mine site. The Tyrone Mine site is also a place of withdrawal for reasonably foreseeable future use. It is foreseeable, and even likely, that wells will be placed on or around the mine site in the future, for drinking or agricultural purposes. It is also foreseeable that one or more of the several hundred existing wells at the Tyrone Mine will be used in the future for a domestic or agricultural water supply. It is also foreseeable and very likely that water pumped from the main pit – which acts as a large well – will be put to beneficial use for drinking or agriculture.

The Tyrone mine site sits over two specific water-bearing units, or aquifers: the alluvial aquifer and the regional aquifer. The Tyrone Mine site is a place of withdrawal of water from the alluvial aquifer for present or reasonably foreseeable future use, and it is a place of withdrawal of water from the regional aquifer for present or reasonably foreseeable future use. The Tyrone Mine site also straddles two separate hydrogeologic basins: the Gila Basin and the Mimbres Basin. Each of these basins is recognized by the State Engineer as a separate ground water basin. And each basin is designated a declared basin by the State Engineer; the State Engineer has declared each basin "to be public waters and to belong to the public and to be subject to appropriation for beneficial use." NMSA 1978, § 72-12-1. The Tyrone Mine site is a place of withdrawal of water from the Gila Basin for present or reasonably foreseeable future use, and the Tyrone Mine is a place of withdrawal of water from the Mimbres Basin for present or reasonably foreseeable future use.

**B. TYRONE'S "POINT OF COMPLIANCE" CONCEPT IS UNWORKABLE**

Tyrone has argued that there should be a specific "point of compliance" at the Tyrone Mine, which would represent the place of withdrawal. Tyrone argues that the Department must pick one or two or some limited number of wells at the mine to serve as the point or points where compliance is determined. The Department absolutely disagrees with that approach. It is unworkable for at least three reasons.

First, under Tyrone's "point-of-compliance" approach, if the ground water from the "point-of-compliance" well or wells meet standards, then groundwater from all the other monitoring wells at the mine do not need to meet standards. Such ground water would effectively be "written off." It would not be protected. It would not need to meet standards. It could never be used for drinking or agricultural purposes. Such an interpretation is contrary to

the purpose of the Water Quality Act and the Commission's Regulations.

There are approximately 500 monitoring wells at the Tyrone mine. Any one of those wells, and lots of other "points" at the mine, could be a potential place of future withdrawal of water.

Second, groundwater is not static; it moves. Contamination can spread. A future production well installed in a clean part of the aquifer, at a hypothetical "point of compliance," could draw in contamination from a distance away.

Third, the Water Quality Act does not anywhere use the term "point of compliance." Neither do the Commission's Regulations. There is no basis in the statute or the regulations for adopting the "point of compliance" concept. Accordingly, the Department does not apply a "point of compliance" concept. In implementing the Water Quality Act, the Oil Conservation Division likewise does not apply a "point of compliance" concept. Further, it would be inappropriate to import the concept from the federal hazardous waste management regulations to the New Mexico Water Quality Act, as one of the Department's witnesses, James Bearzi, will explain.

#### **C. STANDARDS DO NOT APPLY AT THE BOTTOM OF THE OPEN PIT**

On the issue of compliance with ground water quality standards, there is one point I want to clarify. There has been some confusion as to whether the Department requires standards to be met at the bottom of the open pit. Water that drains into the open pits is collected at the bottom in a sump. The Department does not require Tyrone must meet groundwater standards in the sumps at the bottom of the pits.

#### **VI. ALTERNATE ABATEMENT STANDARDS**

The Department takes a broad view of the place of withdrawal language in the



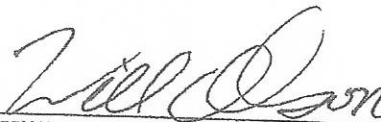
Commission's Regulations. We believe that virtually all ground water in the State is protected, except in the rare places that the discharger can demonstrate are not places of withdrawal of water for present or reasonably foreseeable future use. But the Commission's Regulations are not inflexible. The Regulations expressly provide for alternate abatement standards under certain circumstances. (20.6.2.4103.F. NMAC) If Tyrone wishes to take advantage of alternate abatement standards, it may file a petition with the Commission seeking this remedy. Tyrone has never done so.

## VI. CONCLUSION

In conclusion, the Department recommends that the Commission adopt the seven criteria that the Department has proposed to determine whether the Tyrone Mine is a place of withdrawal of water for present or reasonably foreseeable future use. The Department further recommends that the Commission apply these criteria and determine that the Tyrone Mine is such a place.

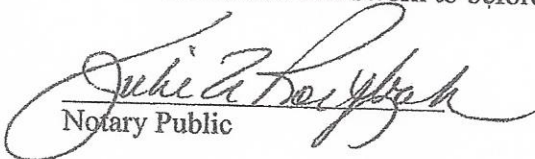
Thank you. That concludes my direct testimony.

I, William Olson, swear that the foregoing is true and correct.



William Olson  
Chief, Ground Water Quality Bureau  
New Mexico Environment Department  
Santa Fe, New Mexico

Subscribed and sworn to before me this 9<sup>th</sup> day of July, 2007 by William Olson.



Notary Public

My commission expires:

May 13, 2008