Larry Petersen
<bluewhale@rnsmte .co
m>

03/13/2008 09:55 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Copper Project

After reading the different articles in newspapers concerning the Rosemont Copper Project, I can only hope that the government "will not" let this project proceed any further. Not only will the environment be completely destroyed, but the local community will be subjected to the worst kind of social destruction imagined.
I live north of the town of Benson on Ocotillo Road which used to be a residential/ranching area and there now is a sand, gravel and concrete operation five miles north of the town that has totally destroyed our quality of life with heavy overloaded trucks ruining the road as well as causing a major safety issue due to the speeding of these trucks on this two lane road. At different times the noisy pit operation begins at 1:30 AM and the truck traffic shortly after that. The size of the pit is constantly getting larger and the dust from it is not controlled at all times. The first mile of the road was rebuilt in early 2007 and then had to be done over later due to the damage caused by the heavy trucks. Costs to the Cochise County taxpayers now sits at over a half a million dollars for that incident alone. The County hasn't even begun to replace the next four miles as promised in 2005, So the residents are forced to drive on a washboard and potholed road. The presentation to the Cochise County Board of Supervisors by a representative of the Huachuca Concrete Company in April 2005 to remove the weight limit from the road to allow the heavy trucks to operate was nothing but lies and more lies regarding the operating times and number of trucks operating and their handling of the pit dust problems. Also it should be noted that the promises of water conservation by the pit is not happening as they dug a well to use as much water as they want and not be accountable for it.

Needless to say the community was "sold out" by its Supervisor who voted to allow the weight limit to be removed and the operation to start and the destruction of our community to begin.

If you want to see a mining operation and its negative effects on a community drive I-10 East to Exit 304 (Ocotillo Road) and drive North five miles.

When I drive I-10 to Tucson I enjoy the beauty of the area and have a hard time thinking of the potential destruction that will happen to it if the Rosemont Mine is allowed to begin operation there.

The promises being made by Rosemont Copper Company for environmental controls and safety issues are pure lies. "MINING COMPANY'S LIE" to get what they want and then tell the authorities to "get lost".

I implore you not to allow this further raping of our land under the guise of a need for more copper.

Sincerely,
Lawrence J. Petersen
1060 W. Edwards Lane
Benson, AZ 85602
520-586-7276

"Loreto Mendez -Ahlers" <whisperingrose@hughes.net>
03/13/2008 10:07 AM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: mines

I am a native born person from Tucson, Az. and my Dad was a copper miner since the days when a cage was dropping the miners into the bowels of the earth to wrest the precious metal from it's sides. My Father put food on the table for nine people in those days, BUT, he could only provide the basics for his family, i. e. a roof over our heads and the food. There were no extras, like a savings account or new vehicles.

This endeavor does not make our economy better, it only benefits the rich companies that will scar our mountains and then leave the raped and gaping hole for the locals to grieve over. The few dollars locals will make will be incomparable to the wealth these companies will realize. **This is greed**, it is not for the good of the whole, it is not for the betterment of humankind, and it certainly is NOT for the good of our Earth.

I know what it means to have an open pit mine in the middle of the most scenic and inspiring view we have in this part of the country, it means no more lovely Santa Ritas, no more admiring our beautiful scenery as we drive to Tucson, and it will be a constant reminder of how our government allows foreign companies to come onto our piece of earth to plunder our resources and then leave with a fistful of dollars.

Therefore I vehemently protest this project.

Reverend Mother Loreto Mendez-Ahlers, Archangel San Rafael Chapel Independent Catholic Church of Antioch in the San Rafael Valley

---

A Nation is never conquered until the hearts of it' women are on the ground;Then it is done, no matter how brave it's warriors nor how strong it's weapons--

----Cheyenne Proverb---- Loreto Mendez-Ahlers.vcf

Jackgipson@aol .com
03/13/2008 09:47 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Proposed Rosemont Mine

As a frequent hiker in the Coronado National Forest I am strongly opposed to the use of Forest Service Land for mining activity. I urge you to consider this plan carefully and to reject it. The destruction of habitat for wildlife, the overpumping of water, and the awful appearance of the tailings would be very damaging to the Coronado Forest and to the Santa Rita Mountains. Please reject this mining use.

****

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Jennifer.White@bbraun
.com
03/13/2008 09:11 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: proposed mine at Rosemont

I recently sent the attached letter to Ms. Beverley Everson, so I will send it in again as a formal comment on the proposed mine.

I would also like to state that I think it is a travesty and an insult to allow Sumitomo to come in here and destroy our land. This is the same company that forced our soldiers and sailors into slave labor, taking them prisoner in the Philipines and forcing them to work in Japan until the end of World War II.
This company is doing business with Augusta Resources, I believe, in order to cover up the true ownership. Augusta Resources website basically states that the mine in the Santa Rita Mountains is a "done deal". Please do not let them destroy this beautiful area. The water, the wildlife and the beauty of the area belong to all of us as citizens, not to a foreign company.

Thank you for your attention, and below is the copy of the letter that I sent recently to Ms. Everson.

(See attached file: letter to forest service.doc)

Best Regards,
Jennifer A. White, RN, BSN, CNN
Sr. Clinical Specialist
B. Braun Medical
TEL: 610-997-4813
FAX: 610-691-1547
MAIL: Jennifer.White@BBraun.com
****
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letter to forest service.doc

15515 E. Hillton Ranch Road
Vail, AZ 85641
March 3, 2008

Ms. Beverley Everson
Coronado National Forest
300 W. Congress St.
Tucson, AZ 85701

Dear Ms. Everson,

I am writing today to request your help in preserving our wonderful valley out here between Vail and Sonoita. I live along state route 83, which, as you know, follows the Davidson Wash as it flows from south to north.

My husband and I moved out here from Tucson about 6 years ago in order to have a peaceful rural life along with our horses and other animals. We bought this place largely for the excellent water well that had been drilled, and the nice quiet rural residential area.

Now all this is terribly threatened by Sumitomo Corporation and Augusta Resources, who want to put in a gigantic copper and molybdenum mine about 4 miles south of us. My understanding is that they plan to mine on private property, but dump their tailings on Forest Service land.

This would be a disaster of the highest magnitude. Worst case scenario, we would have hauling trucks constantly running up and down route 83, with pollution, vibration, and noise. This alone will make living here unbearable. Our other immediate concern is the distinct possibility that our well will go dry as the mining operation pulls more and more water out of the ground, upstream from us. It will not be worth living out here if we have to go to town, pay for water, and haul it out. These are our main personal concerns.

I am also very distressed over the destruction of one of the last remaining wild areas in southern Arizona. The forests, the open lands, the wildlife that is only found in the Santa Rita Mountains, are all threatened. The lifestyle and economies of people in Patagonia and Sonoita will also suffer, since the tourist business that they depend on also uses route 83 to get to those areas. No one is going to want to drive down 83 surrounded by huge trucks. The state will have to remove the Scenic Route designation.

If this mine is allowed to go in, and our way of life is ruined, who is going to reimburse us? We won't be able to sell our property, but we won't be able to live here either. Will the state or the county pay us the fair market value? Will Sumitomo/Augusta be required to reimburse those people whose lives they have disrupted and who have to move away?

It is not an easy thing to pick up a household, horses, and all their equipment, and find another place to live that is affordable. I am

especially threatened because I am nearing retirement age, and will not have the income to finance another purchase.
The National Forest Service, and our elected officials, need to think about the lives of the people who already reside out here. Our needs and rights should take precedence over foreign corporations whose plan is to send profits overseas while they destroy our beautiful area. This is patently wrong, and un-American.
Please help us preserve our lands. Do not provide permits for the destruction of public land which belongs to the citizens of this country.
Thank you for your attention, and please let me know where the forest service stands in their decision-making process.

Sincerely,

Jennifer A. White

Cc:
Senator John McCain
Senator Jon Kyl
Representative Gabrielle Giffords
Representative Raul Grijalva

"Bruce Whitehouse "
<deadchief@hotmail .co
m>

03/13/2008 09:14 AM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont Mine

Hello: I live in Corona de Tucson, and the proposed Rosemont Mine is directly south of us in the Santa Rita Mountains. This is a potential environmental disaster to the water shed in Davidson Canyon, the ground water being pumped out of Sahuarita Heights, and the whole Scenic Santa Rita Range. I am the fire chief of the Corona de Tucson FD and we are the ONLY rescue squad within 20 miles of this mine. The wrecks will be quite deadly when they happen, I am certain. Motorcycles, bicycles, tourists, sightseers and ore trucks don't mix. School buses don't either. Ruining a scenic highway (designated US 83) for foreign mining interests only compounds the problems. These ore trucks will not be compatible with US 83, so it too will be destroyed. How can anybody possibly allow a company to dump tailings on OUR national forest? I have been to quite a few meetings with local people who are opposed to this cloak and dagger operation, and don't feel that the government, the BLM, the USFS or the State Land Department really care one bit about the residents of the area that will have their homes and property adversely affected by this. I have lived here for 32 years, and don't desire to be chased out by foreign mining interests. Please stop this madness, it is a bad idea. Sincerely, Bruce Whitehouse

sj pevarnik
<sjpevarnik@yahoo .co
m>

03/13/2008 07:06 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Mine

Hello- I am writing in regard to the proposed mine in Rosemont Junction. I live 12 miles from the proposed site and am concearned about several problems with dust, water and general enviornmental problems with the mine. I hope all factors will be taken into consideration regarding this one last pristine place in this valley. Thank you- Joan Pevarnik 781 n Slate Vail Az 85641.

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"Davita"
<davitamueller@cox .net
>

03/12/2008 09:20 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc: "'Elizabeth Webb'" <rinconvalleyis@hotmail.com>, "'J.J. Lamb'" <vailpreservationsociety@gmail.com>, <nicole.fyffe@pima.gov>, <tbee@azleg.gov>, <mmcclure@azleg.gov>, <sfarley@azleg.gov>, <ward4@tucsonaz.gov>
Subject: Notice of Public Meeting for Coronado National Forest to Prepare Environmental Impact Statement for Rosemont Copper Mine

Ms. Derby,
Regarding: Notice of Public Meeting for Coronado National Forest to Prepare Environmental Impact Statement for Rosemont Copper Mine Project.

I am most concerned that the Public Meeting notice was released (March 11) only a week before the first meeting (March 18, March 19, and March 20). And that if I had not received it by email from a neighbor on the contact list for Pima County that I would not have seen the notice.

One: March 10 - 21 is the Spring Break period for the Vail School District (which will be directly impacted by the proposed mine), and residents may be on vacation during this time. Therefore both the notice and the meetings would be past without any input from these residents.

Two: Both Pima Community College and the University of Arizona have their Spring Break, March 17 - March 21.

Three: I agree with Mr. Huckleberry, that:

If the news release that I received had been mailed instead of forwarded by email - my neighbors and I personally may not have heard about the planned meetings until after they had been held.

Without an opportunity for the residents that will be directly affected by the increased major traffic and other environmental issues of this project - being able to hear and participate in the process - I believe the outcome of the limited public participation will be flawed.

Please note: in addition to those noted above - I have copied the text of this email to my US Congressional Representatives.

Davita Mueller
9006 E. Orchid Vine
Tucson, AZ 85747

Home: 520-574-8613
Cell: 520-271-1822
davitamueller@cox.net

"Bryan MacManus "
<ztriangleranch@gmail . com>

03/12/2008 09:31 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Mine

How many times have we made mistakes in this country-political, social, environmental? All anyone has to do is drive through Clifton, Arizona to know that allowing this mine just southeast of Tucson to open and decimate the mountains and valleys is just plain wrong. We, as a nation are consumers-how much do we really need and at what cost. Phelps Dodge leaves the mines in Bisbee open just enough so they don't have to do any restoration work. There is no intention of any of these mining companies to do "restoration" work, whether it's required or not. It is a shame that the BLM, National Forest Service and private property owner's lack the wisdom, foresight and hindsight necessary to know that this is all wrong. Environmental Impact reports are a formality. We have all seen so many alleged reports that are simply documents to placate the public-so the companies can say they conformed. You don't need a report to know that the environment is impacted by mining, regardless of the kind of mining operation. All you have to do is walk around the surrounding mining communities and see for yourself. Stop this project-for the good of the people, the earth, the animals, the environment.

Jody MacManus

Carolyn Classen
<pololu@hotmail .com>
03/31/2008 05:13 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont copper project EIS

I am opposed to the Rosemont copper mine because there will not likely be enough water for such a large project over 20 years. Those mining jobs will be temporary but the harm to the pristine Santa Rita Mts. and the wildlife and vegetation there will be permanent. (I seriously doubt that Rosemont Copper can adequately "reclaim" that land once it has been mined.) Tourism in that area will also be harmed by letting this mine go forward.

This proposed project needs a thorough Environmental Impact Statement to clearly define the serious impacts to the environment and water availability of that area.

Carolyn Classen, Esq.
Tucson, Arizona

In a rush? Get real-time answers with Windows Live Messenger.

Steve_in_Arizona
<nitroxer2003@yahoo.com>

03/31/2008 04:04 PM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Historical Preservation Rosemont Site

Scoping Comments for the Rosemont Mine NEPA process.

Please observe your USDA Forest Service Proceedings RMRS-P-30. 2003 (attached). This article details historical sites in the Santa Rita Mountains and the valley of the Santa Cruz.

The author describes the history of Southern Arizona and sites found so far; the potential for buried archaeological sites is stated as "certain".

It would see to me that an open pit mine is certain to forever lose the history of Southern Arizona and its peoples. Several sites on the Rosemont property are mentioned.

Please contact the authors and researchers (as expert wittnesses) cited in this FS publication for Scoping comments.

Dr. Steve Chrisman
Sahuarita, Arizona

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Cultural Resources of the Santa Rita Experimental Range.pdf

John H. Madsen

Cultural Resources of the Santa Rita Experimental Range

Abstract: The Santa Rita Experimental Range is a vast open space with few signs of houses or human habitation, but at one time it was quite the opposite scene. Archaeological surface inspections reveal heavy use of the Range dating back hundreds of years. This paper will review the history of cultural resource management on the Range and provide a timeline of local cultural history pertinent to understanding the cultural landscape on the west flank of the Santa Rita Mountains. An archaeological site inventory done by Cynthia Buttery in 1985 and 1986 will be the central focus of this paper. Buttery's work provides an important picture of land use on the Range over 800 years ago by Hohokam farmers. The paper will conclude with comments on cultural resource management and research opportunities on the Santa Rita Experimental Range.

Introduction

This paper will address the history of cultural resource management on the Santa Rita Experimental Range (SRER or the Range) and will provide a summary of how the land was used by American Indians prior to European contact in the late 1690s. The paper will conclude with a summary of potential strategies to protect and preserve cultural resources on the Range and a view of how we might blend the environmental information found in prehistoric sites with more traditional range-oriented research themes.

Historic Preservation Policy Applicable to Santa Rita

Two Federal laws set the stage for cultural resource management on the Santa Rita Experimental Range. The Archaeological and Historic Preservation Act of 1960 (AHPA) (Public Law 86-523, 16 U.S.C. 468–469c-2) was adopted to further improve the intent of the Historic Sites Act of 1935 (16 USC 461–467). The intent of AHPA is to preserve historic American sites, buildings, objects, and antiquities of national significance. The Act provides for the protection of historical and archaeological data (including relics and specimens), which might be irreparably lost or destroyed as a result of alterations to the land caused by a Federal agency or a Federally licensed construction project.

The second law of importance was the National Historic Preservation Act (16 USC 470 *et seq.*). Enacted in 1966, this Act provides for a National Register of Historic Places, and has broad authority over national, State, and local historic preservation programs. Section 110 of the Act has had the most significant impact on the Range.

Section 110 directs the heads of Federal agencies to assume responsibility for the preservation of National Register listed or eligible historic properties owned or controlled by their agency. Agencies are directed to locate, inventory, and nominate properties to the National Register, to exercise caution to protect such properties, and to use such properties to the maximum extent feasible. Other major provisions of Section 110 include documentation of properties adversely affected by Federal undertakings and the establishment of trained Federal preservation officers in each agency.

After the passage of the National Historic Preservation Act, Federal agencies with land managing responsibilities began to fill their ranks with cultural resource managers. The Santa Rita Experimental Forest, as it was called in the 1960s, fell into a unique Federal land category. Because the land was not within the boundaries of a National Forest, it was identified as "other Federal lands" and was administered by the Bureau of Land Management (BLM). The USDA Forest Service Rocky Mountain Forest and Range Experiment Station managed the surface of the land through an interagency agreement with the BLM.

Management of cultural resources on the experimental range was shared between the Coronado National Forest and the Rocky Mountain Forest and Range Experiment Station. Little was known about the cultural resources before 1974. The Coronado National Forest employed its first Forest Archaeologist by 1975. Personnel at the Station, in cooperation with the

John H. Madsen is an Associate Curator of Archaeology at the Arizona State Museum, P.O. Box 210026, University of Arizona,Tucson, AZ 85721; e-mail: jmadsen@u.arizona.edu. He has a B.S. degree in environmental studies and an M.A. degree in archaeology from California State University, Sacramento.

In: McClaran, Mitchel P.; Ffolliott, Peter F.; Edminster, Carleton B., tech. coords. Santa Rita Experimental Range: 100 years (1903 to 2003) of accomplishments and contributions; conference proceedings; 2003 October 30–November 1; Tucson, AZ. Proc. RMRS-P-30. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Forest Archaeologist, conducted cultural resource inspection on SRER in advance of ground alterations related to fence installations, buried pipelines to livestock water supplies, and road maintenance.

In the 1980s opportunities arose to place large blocks of sensitive habitat in south-central Pima County under the jurisdiction of the U.S. Fish and Wildlife Service. In an elaborate exchange that involved land from several agencies including the U.S. Forest Service, BLM, and U.S. Fish and Wildlife Service, the Range was transferred to the State of Arizona in 1990. Today the Santa Rita Experimental Range is administered by the Arizona State Land Department and leased to the University of Arizona for ecological and ranch lands research.

Land management responsibilities for SRER now fall to the Arizona State Land Department and their lessee, the University of Arizona. National historic preservation policy applies to SRER when Federally funded or licensed projects or Federally funded grants are used in a way that might impact cultural resources. In such instances the Arizona State Historic Preservation Office in consultation with the funding or licensing agencies, the recipient of the funds or license, and other interested parties, such as Arizona Tribes, assure compliance with Federal legislation.

Two State laws now serve to protect and preserve the prehistoric, historic, and paleontological resources within the boundaries of the Experimental Range during the normal course of daily operations and management, and during State and privately financed research. The first of these laws is the Arizona State Historic Preservation Act of 1982 (Title 41, Chapter 4.2 Historic Preservation, Article 4, General Provisions, A.R.S. Sec. 41-861 through 864). This State law and its associated policies are administered in part by the Arizona State Historic Preservation Office and guide land-managing agencies and institutions like the University of Arizona through their responsibilities to protect and preserve cultural resources on lands they own or control.

The second State law pertaining to SRER is often referred to as the Arizona Antiquities Act, but in actuality is Title 41, Chapter 4.1 Article 4, Archaeological Discoveries (A.R.S. Sec. 41–841 *et seq.*). The University of Arizona has a long and honored role in the implementation of this law. In 1927, the Arizona Eight Legislature enacted the first law to regulate excavation of prehistoric ruins on State and Federal lands in Arizona through a permit system. The legislature assigned the task of administering this statute to the University of Arizona, Department of Anthropology. The Department administered the Act until 1960 when amendments placed administration of the law under the Arizona Board of Regents and the Director of the Arizona State Museum, University of Arizona (ASM).

The intent of the Arizona Antiquities Act is to protect the information contained in historic and prehistoric ruins, and paleontological deposits by controlling access to sites on State lands through a permit program administered by the ASM. The Act has been amended six times to keep pace with national and State historic preservation policy and is one of the strongest preservation and grave protection laws in the nation.

The University of Arizona has a consistent record of compliance with the State Historic Preservation Act and the Arizona Antiquities Act. New information about the cultural resources on SRER is slowly but steadily gathered as archaeological surveys required by State law are conducted in advance of range management and range research projects.

Previous Archaeological Investigations

In the northeast corner of SRER lies Huerfano Butte. This rocky outcrop contains many archaeological features and will be described later on in this paper. In 1958 William Lindsay reported a bedrock seed-processing location on the Butte, and the ASM gave it a State site number. In 1965 the Butte gained public notoriety when a young girl discovered a prehistoric jewelry cache while on a picnic. This discovery resulted in the first and only scientific journal article about the archaeology of SRER (Bahti 1970).

In 1974 the U.S. Forest Service began to require surveys on the range in response to the passage of the National Historic Preservation Act. The Forest Service recorded eight small sites between 1974 and 1985.

Cynthia Buttery (1987) accomplished the first systematic archaeological inventory on the Range. Over a 2-year period from 1985 to 1986, Buttery recorded 46 Hohokam sites. This research was accomplished in partial fulfillment of her master's degree in anthropology at Texas Tech University and provided information for U.S. Forest Service and Research Station personnel to better manage and protect the cultural resources under their care.

From 1987 to present, five compliance surveys have been completed on the Santa Rita Experimental Range and were related to the placement of water pipelines, soil testing, and road improvement projects (Lange 1999; Lascaux 2000; Madsen 1991; Stone 2001; Swartz 2002). The most recent work by Swartz (2002) was in response to proposed carbon sequestration studies funded in part by NASA. The School of Natural Resources, University of Arizona contracted for archaeological assistance from Desert Archaeology, Inc., to meet Federal requirements for funding. Swartz examined the surface of six parcels prior to the excavation of trenches related to this study. The archaeological inspection resulted in the discovery, recordation, and avoidance of one small prehistoric site. Swartz also found historic features related to early research on the range. Swartz (2002: 17) found it interesting that: "Taken as a whole, across the entire 53,000-acre Range, ... markers and other remains from studies [conducted] in the first half of the twentieth century may meet eligibility requirements for inclusion in the National Register of Historic Places." These artifacts of past research on the Range may contribute to our understanding of the history of range research in the Unites States beyond the written record. By virtue of being an experimental station with 100 years of continuous operation and contributing significantly to range research, SRER today may warrant national recognition as an historic landmark.

Southern Arizona Prehistory

A short summary of southern Arizona prehistory is provided so that the reader can better understand the prehistoric cultural resources of the SRER. Some findings, particularly

those from Buttery (1987), are incorporated into the body of this summary, but most of the detailed information from her work on Hohokam resources will follow this summary.

Big Game Hunters

From archaeological and paleontological investigations a picture has emerged regarding life in the Western Hemisphere from 10,000 to 8,500 B.C. The term "Paleoindian" is used to identify the earliest inhabitants of North America. The origin and ethnicity of these people continues to be debated, but it is sufficient to say they moved about in small groups, lived in temporary camps, and hunted megafauna. Butchering sites with stone tools found in association with the remains of mammoth have characterized these people as big game hunters. In southern Arizona, known butchering sites are located in the San Pedro River Valley and Sulphur Spring Valley. A spear point type referred to as the Clovis Point (first discovered near Clovis, NM) has been found embedded in the bone of mammoth at the site of Naco, AZ (Haury 1953), and at the nearby sites of Lehner (Haury and others 1959), and Murray Springs (Hemmings 1970).

Mammoth remains have been found in the Santa Cruz River watershed. Within the boundaries of SRER a mammoth tusk was found in an eroding arroyo bank (Buttery 1987: 12). The discovery of Clovis points (Agenbroad 1967; Ayers 1970; Doelle 1985; Huckell 1982) and a later style of point called the Plainview Point (Agenbroad 1970; Hewitt and Stephen 1981; Huckell 1984a) indicate a presence of big game hunters in the Santa Cruz River Valley before 8500 B.C. However, archaeological sites with mammoth remains and Clovis or Plainview points have yet to be discovered in the Tucson Basin.

Archaic Hunter Gatherers

Mass extinction of mammoths, mastodons, camels, horses, giant ground sloths, and other large Pleistocene mammals is attributed to climatic change and excessive hunting. By 8500 B.C. the door closed on the big game hunter era, and for the next 7,000 years American Indians adapted to changing environments and landscapes. People focused on mixed subsistence strategies of hunting smaller game, fishing, and eating wild plant resources. Data on social organization, economy, and ritual behavior are severely limited, but there is evidence to show increased sedentism between the early and late periods. Across North America this period of 7,000 years has been separated into the Early, Middle, and Late Archaic periods. These periods are not chronologically similar from region to region. In Arizona, Archaic hunter-gatherer sites are assigned to one of three periods within the Southwest Archaic Tradition: the Early Archaic (ca.7500 to 5000 B.C.), the Middle Archaic (ca. 5000 to 1700 B.C.), and Late Archaic (ca.1700 B.C. to A.D. 150). The term Late Archaic is also synonymous with Huckell's Early Agricultural Period (Huckell and others 1995).

Transition to Agriculture

The term Early Agricultural best reflects the cultural setting between 1700 B.C. and A.D. 150. During this period farmers irrigated fields of maize on the flood plain of the Santa Cruz River and farmed at the mouths of watered canyons. They supplemented their diet with deer and other small game and wild plant foods (Diehl 1997; Ezzo and Deaver 1998; Gregory 1999; Huckell and Huckell 1984; Huckell and others 1995; Mabry 1998; Roth 1989). Sedentism is expressed in the archaeological record by discoveries in recent years that include dozens of houses per village, irrigation ditches, and the byproducts of food processing such as carbonized or burned maize and animal bone. With people spending more time in one location, trash accumulated, as objects were discarded or cached away. The resulting material culture of the early agriculture period includes diverse flaked stone and ground stone tool assemblages, carved stone pipes, clay figurines, and crude pottery vessels. Seashell and other nonlocal resources indicate involvement in trade. Data on social organization and ritual behavior are speculative. Larger than normal oval structures found in village settings might be social or ritual places or perhaps the homes of influential people.

Huckell (1984b) excavated 10 sites at Rosemont on the eastern slopes of the Santa Rita Mountains immediately east of SRER; these sites span the later portion of the Southwest Archaic Tradition through the Early Agricultural Period. No such sites are recorded yet on SRER, but 10 diagnostic arrow points of Archaic and Early Agricultural origin have been found on the Range.

Early Ceramic Period

The Early Ceramic Period (A.D. 150 to 650) is a relatively new concept within the Tucson Basin (Heidke and Ferg 2001; Heidke and others 1998). Although ceramic artifacts, including clay figurines and crude plain pottery, were made during the Early Agricultural period, pottery containers revolutionized life after A.D. 150. Over this 500-year period, pottery was refined into nicely made plain ware and red ware vessels. A variety of new pit house styles are found—basically shallow rectangular pits protected by a framework of posts and beams supporting a coat of matted grass, brush, and mud. Overall a less homogenous culture is seen. As people become less mobile, more time is available to experiment and to adopt ideas from distant lands to make life easier. It is not known if these changes are a step in the evolution of the local sedentary population or reflect the influence of new people. Cultigens, including maize, beans, squash, and cotton, wild plants, and hunting were important parts of the subsistence economy. Greater quantities of imported materials such as turquoise, obsidian, and shell suggest a greater investment in a sedentary life. Data on social organization and ritual behavior remain speculative. The cultural setting by A.D. 650 sets the stage for the emerging Hohokam tradition.

Hohokam

Hohokam is the English pronunciation of Hu Hu Kam, a word used in the Piman language to mean "those who are gone." O'odham ancestral roots are deeply embedded in the ancient cultures of the Sonoran Desert.

The geographic extent of the Hohokam tradition coincides closely with the basic and persistent patterns of settlement

and subsistence seen in the Sonoran Desert before the sixth century A.D. By A.D. 650 new cultural traits such as pottery with red decoration, public architecture, and extensive irrigation systems are identifying characteristics of the Hohokam. These new cultural elements were so innovative that renowned archaeologists Harold Gladwin (1948) and Emil Haury (1976) postulated a Mesoamerican migration into the fertile Salt River and Gila River valleys. In recent years new archaeological data suggest that the traits that uniquely identify the Hohokam are products of internal experimentation as well as the external influences of the Anasazi and Mogollon cultures and the northern cultures of Mesoamerica.

Hohokam Community—For purposes of this discussion, Hohokam history is divided into the Preclassic period (A.D. 650 to 1150) and the Classic period (A.D. 1150 to 1450). The Hohokam aggregated into cohesive agricultural communities that occupied every hospitable niche within the Sonoran Desert. The term "community" refers to clusters of sites dominated by villages of different size and social complexity that maintained farmsteads, multifaceted agricultural systems, and smaller sites located strategically to acquire natural resources (Fish and others 1992).

Each community had a central village supporting one or more forms of public architecture. In the Preclassic period, clay-capped ceremonial mounds and ball courts identified the religious, economic, and social centers of a community (Gladwin and others 1937; Wilcox and others 1981; Wilcox and Sternberg 1983). A shift in Hohokam ideology eventually caused the decline and eventual abandonment of ball court centers and the rise of Classic-period platform mound communities reflecting the emergence of new positions of authority. O'odham oral history suggests that platform mounds may have been built for the Hohokam elite (Teague 1993).

Hohokam community organization speaks to a high order of cooperation and social interaction that reaches beyond community boundaries. These same organizational skills are also seen at the village level with remarkable consistency through time. During the Preclassic period, families organized into cohesive courtyard groups. Each courtyard group contained clusters of rectangular pit houses, cooking ovens, cemeteries, and trash disposal areas positioned around the edge of a common open space (or courtyard). In some larger villages, multiple courtyard groups were positioned around larger central plazas (Doyel 1991).

By the Classic period the courtyard group takes on a pueblo design because of innovations in architectural materials, particularly adobe block construction. Villages contain from one to as many as 20 compounds, each defining the living and working space of a related social group. Within compound walls, groupings of houses and ramadas face common yards containing workspace and cemeteries. Trash mounds and large cooking ovens lie on the exteriors of compound walls.

Hohokam Farming—By the sixth century A.D., the people of the Sonoran Desert had had nearly 2,000 years to hone their agricultural strategies. In the broadest river valleys like the Phoenix Basin, Preclassic and Classic-period Hohokam communities were organized to maintain one or more river-fed irrigation systems. Villages and farms were strategically positioned along miles of arterial aqueducts, canals, and ditches that provided water to croplands.

In narrow river basins like the Santa Cruz and San Pedro, mountains squeeze the flood plains into narrow stripes of fertile land. During the Preclassic and Classic period, Hohokam communities organized along the edges of these flood plains and successfully used river water to irrigate crops. The narrowness of valleys also offered the same communities an opportunity to diversify their agricultural strategies by farming the alluvial fans of nearby mountains. Here the Hohokam planted the lower limits of fans where a combination of direct rainfall and the construction of diversion dams directed water from swollen washes to adjacent fields.

In basins with no perennial waters alluvial-fan farming was supplemented with other faming techniques including diverting rainwater into deeply excavated storage reservoirs for domestic use and pot irrigation, blocking gullies with rock terraces to capture flowing water and sediments, and planting crops in gardens bordered on all sides by rock walls that captured rainwater, prevented runoff, and caused soil saturation. Specialized crops like agave were grown in piles of soil and rock that caused a mulching effect and minimized evaporation.

Hohokam Craft Specialization—Part of the diverse material culture of the Hohokam—craft specialization—emerges from the early ceramic period and takes on a strong Mesoamerican orientation. Seashell, minerals and rock, animal bone, plant fiber, and clay were transformed into utilitarian, status, and ritual objects with diverse form and function. The common person possessed the skill to make plain ware pottery and flaked stone tools for hunting, harvesting, and processing food, but skilled craft specialists were spread throughout communities and were actively involved in repetitive manufacture of products and their subsequent trade. People specialized in making jewelry, ritual objects of stone and clay, textiles, and decorative pottery.

Pottery such as bowls, jars, ladles, and effigy forms, with painted red designs was the signature of the Hohokam people. The earliest decorated pottery was a gray ware with simple incised exterior lines and red painted designs. By A.D. 800 brown pottery with red designs dominated southeastern Arizona while buff-colored pottery with red designs dominated the central basins of the Salt and Gila Rivers. By A.D. 1300 the introduction of distinctive red, black, and white polychrome pottery provides intriguing questions about cultural influences, suggesting, perhaps, the acceptance of outside ideology and/or religion (Crown 1994).

The momentum of the Hohokam culture wanes by A.D. 1350, and their descendants reorganize themselves over the landscape. Pima oral histories tell of social and political upheaval and of environmental factors that profoundly alter the cultural landscape of the Sonoran Desert (Teague 1993).

Reorganization Period

By A.D. 1450 warfare, drought, floods, disease, or some combination of these factors caused change in the structure of Hohokam society. Desert people did not vanish from the landscape—they simply reorganized. In 1697, Captain Juan

Mateo Manje and Father Eusebio Kino explored the valleys of the San Pedro, Gila, and Santa Cruz Rivers. In the Gila River Valley these explorers noted the abandoned Casa Grande Ruin and other burned out Hohokam towns. Yet the Spanish encountered fertile irrigated croplands and many villages, where often hundreds of people would come out to welcome them. People were still living a sedentary lifestyle, but it was seemingly on a different scale than 250 years prior and analogous to that of people living a thousand years earlier. Villages were nothing more than clusters of small oval huts built of sticks and mats (Burrus 1971; Karns 1954). The people encountered by Kino were the descendants of the Hohokam and are the ancestors of the O'odham-Piman people.

Southern Arizona History

Hispanic Arizona—Hispanic Arizona is separated into the Spanish Colonial period (1536 to 1821) and the era of Mexican Independence (1821 to 1856). Most of the major river valleys of present-day Arizona were explored, and a pattern of European settlement was established over this 320-year span. Life on the northern frontier of New Spain was dangerous, and for the Spanish, and for the later Mexican citizen, being able to safely and permanently settle in any one location was never easy.

Franciscan priests attempted a permanent secular presence with the Hopi Tribe from 1629 to 1730 but met with little success. In southern Arizona the Jesuits similarly placed priests at the Indian settlements of Guevavi and Bac on the upper Santa Cruz River between 1701 and 1732. It was not until 1736, when silver was discovered south of present-day Nogales, that miners and ranchers hurried to the borderland of New Spain. The stage was now set for a permanent Hispanic presence in what is now Arizona, and the Santa Cruz River drainage attracted the highest density of Hispanic people. Thereafter, conflict with Indian communities, particularly the conflict between the Apache and Spanish colonists, impeded permanent political and social stability. Even the stationing of garrisoned troops and the building of four presidios, including one at Tubac (established 1751) and one at Tucson (established 1776), did little to protect missionaries, miners, ranchers, and Indian allies. A brief negotiated peace between the Apache Indians and the Spaniards brought calm to the region around 1790, but the success of the Mexican Independence Movement culminated in the end of Spanish rule in 1821, bringing new political problems and instability between the Hispanic population and American Indian.

During the Mexican period (1821 to 1854), conflict with the Apache people intensified in the borderlands, and settlers again retreated to the safety of the presidio forts. Only the courageous dared to face the isolation of the mining camps and ranches of the hinterlands. The instability of the period is exemplified by the failure of land grants. The San Ignacio De La Canoa Land Grant is of particular interest because of its proximity to SRER. In 1821 brothers Tomás and Ignacio Ortiz gained title to 42,000 ha (17,000 acres) along the Santa Cruz River, extending from the western edge of SRER south to present-day Amado. The southern boundary of the land grant was just a few miles north of the presidio of Tubac, yet by 1835 repeated Apache raids forced the brothers to abandon their ranch and to tend their herds from the safety of the Tubac Presidio.

United States Annexation—Mexico's refusal to sell lands to the United States or to resolve land disputes in Texas resulted in the Mexican War of 1846. The Treaty of Guadalupe Hidalgo in 1847 ended Mexican control over a vast region, including Texas, as well as portions of New Mexico, northern Sonora, and upper California. Under the Compromise of 1850, the U.S. Congress created the New Mexico Territory, including present-day Arizona north of the Gila River, Southwest Colorado, southern Utah, and Southern Nevada. The Treaty of La Mesilla, also known as the Gadsden Purchase, finally clarified international boundaries in 1854 when the United States purchased 30,000 square miles south of the Gila River.

The period of annexation was a time of transition in the Santa Cruz River Valley. To paraphrase Sheridan (1995), most Anglo Americans viewed southern Arizona as an obstacle and a wasteland on their way to better lands. In 1846 the Mormon Battalion passed through Tucson while mapping a route to California. On their heels came scores of miners, merchants, and stockmen lured west by the discovery of gold in California in 1848. Through the 1850s and 1860s, Anglo attempts at ranching and mining in the Santa Cruz River Basin were marginal and paid few dividends. The Civil War created new problems as Union forces left the region, opening it to Apache reprisals. For example, between 1855 and 1862 cattle ranching continued on the San Ignacio De La Canoa Land Grant; by 1859 a lumber mill, hotel, and tavern were build just southwest of SRER at La Canoa. Apache raiders burned the newly constructed buildings in 1861 (Willey 1979). In 1862 the Civil War reached Tucson when a brief tug-of-war over occupation ended with Union Troops in possession and Confederate Troops retreating to Texas.

The U.S. military, like their Spanish and Mexican predecessors, could do little to calm old and new ethic conflicts throughout the period of annexation. During this period, however, Mexican and Mexican-American residents established the foundation of later successes in southern Arizona.

Arizona Territory (1863 to 1912)—In 1863 the Arizona Territory was carved out of the Territory of New Mexico. The land once considered an obstacle to westward expansion was rediscovered. From 1863 forward, Arizona's gold, silver, and copper resources lured an aggressive rush of miners to the territory, and with each new discovery mercantile centers thrived. The cattle boom of the 1880s paralleled the growth of mining; and, finally, the arrival of the railroad through southern and northern Arizona culminated in the end of the frontier. Throughout the entire era, a growing U.S. military presence broadened warfare, leading to suppression and confinement of Arizona's Indian tribes.

Santa Cruz River Valley—In the 1860s and 1870s, Tucson thrived as a center of commerce and was the territorial capital from 1867 to 1877. Mexican and Mexican-American businessmen dominated the economic markets and provided the majority of services to settlers, ranches, mines, farms, and above all military posts. Networks of freight wagons delivered produce from Mexico, as well as hardware and other goods from the east and west coasts. By 1881 the

Southern Pacific Rail Road offset the balance of power in Hispanic Arizona. Easterners rolled into the region and successfully outbid the established frontier merchants for local markets.

South of present-day Tucson, SRER was in the shadow of the ranching and mining booms. Frederick Maish and Thomas Driscoll ran cattle on the San Ignacio De La Canoa Land Grant in the late 1860s and purchased the land from founder Tomás Ortiz in 1879. By 1899 they had acquired title to the Grant from the U.S. Government. Copper was discovered at the north end of SRER in 1875. Here the mining town of Helvetia had ups and downs with some mining successes until it was abandoned in 1911. The Narragansett Copper Mine was established on the eastern edge of SRER in 1879. Thereafter, a community of 150 people worked the Rosemont Copper Mill and Smelter from 1894 to 1910.

Buttery (1987) notes the presence of at least three historic-period ruins on SRER, and Swartz (2001) notes evidence of past range experimental plots that may date to the Territorial and Statehood periods. Little information exists to fully describe these historic resources. Nathan Sayre (this proceeding) provides an overview of the history of the SRER, and his data will provide a glimpse of what historic resources may lie untapped and awaiting anthropological/archaeological study.

At this point I return to a more indepth look at the Hohokam culture and the patterns of Hohokam use of land within the Santa Rita Experimental Range.

Cultural Resources on the Range

The work by Buttery (1987) provides the primary source of information about Range cultural resources. The principal reason for Buttery's research was to examine how specific environmental factors such as landform, soil, hydrology, and to a broader extent vegetation, influenced how people organized themselves over the landscape in the prehistoric past.

Buttery conducted a systematic surface inspection of the Range with a crew of two to three people spaced 20 m apart. This team walked north-south transects along U.S. Geological Survey (USGS) topographic section lines and half-section lines. These parallel transects at half-mile intervals were chosen to give an evenly spaced, systematic sample covering of all biotic zones on the Range. Based on transect width and length, Buttery indicates that approximately 19,700 ha (8,000 acres), or a 15-percent sample of the 146,000-ha (53,000-acre) range was inspected for archaeological resources. Buttery found 46 prehistoric sites during her study (fig. 1). Sites were plotted on USGS 7.5-minute topographic maps and on to Mylar™ sheets covering 1:24,000-scale aerial photographs. The surface characteristics of each site were recorded on U.S. Forest Service site forms, and sketch maps were made. All site forms are on file at the Supervisor's Office of the Coronado National Forest in Tucson, AZ. Site information is now available to qualified researchers through the State AZSITE Geographic Information System.

Criteria for designating sites were based on the standards of the Coronado National Forest in 1985. Archaeological sites were defined by the U.S. Forest Service as the presence of six or more artifacts in proximity to each other on the surface, or by the presence of obvious prehistoric features on the landscape, such as seed-processing sites with mortar holes in bedrock outcrops.

In 1985 considerable data were available from adjacent regions to seriate Hohokam sites by time periods, and to classify sites into functional groups based on surface artifact assemblages and visible surface features. Borrowing from a site classification system used during Phase B of the Central Arizona Project (Czaplicki and Mayberry 1983: 27–29), Buttery sorted SRER sites into five categories: (1) Lithic Scatters, (2) Garden Sites, (3) Limited Activity Sites, (4) Habitation Sites, and (5) Specialized Activity Sites.

Lithic Scatters (Places Where Stone Tools Were Made)

The Hohokam and their predecessors were expedient toolmakers. If a task required the use of cutting, scraping, or piercing tools, the nearest source of fine-grained rock was used to make the needed implement. The import of exotic stone tools and raw material from outside southern Arizona occurred but was not in any way necessary or extensive.

The Santa Rita Mountains provide a wide range of rock types suitable for making stone tools. On the Range, fine-grained black to gray porphyritic andesite is found in abundant quantities on cobble terraces overlooking the Santa Cruz Floodplain (Jones and others 1998). The same material is plentiful in streambeds on the upper bajada.

Buttery identified six lithic scatters where someone split porphyritic andesite cobbles to make tools. Lithic scatters are characterized by the presence of cores, flakes, and waste debris. Stone cores are cobbles with flakes removed; the resulting flakes are sharp and can be used for cutting, or can be flaked further into other tools. Debris is the byproduct of toolmaking. Three lithic scatters were found in the upper reaches of Sawmill Canyon, and three others at the lower reaches of this drainage. These sites range from 80 to 270 m^2 in size.

Garden Sites

Prehistoric agricultural fields marked by rock piles and low stone alignments cover hundreds of hectares along the edge of the flood plain of the Santa Cruz River from the international border to locations 80 miles downstream at Marana (Fish and others 1992). Interdisciplinary study of these prehistoric agricultural complexes has detailed the nature and extent of agave cultivation during the later portion of the Hohokam sequence. Rock piles and stone terraces enhance the planting environment of the agave plant. The uneven, porous surface of a rock pile allows penetration of rainfall, and the rock acts as mulch, slowing evaporation of soil moisture. Agave pups gathered from a high-elevation habitat in the Santa Rita Mountains were transplanted into rock piles at lower elevation. Agave (or century plant) has been a source of food and fiber for most aboriginal groups of North America living within the distributional range of these drought-adapted perennial succulents.

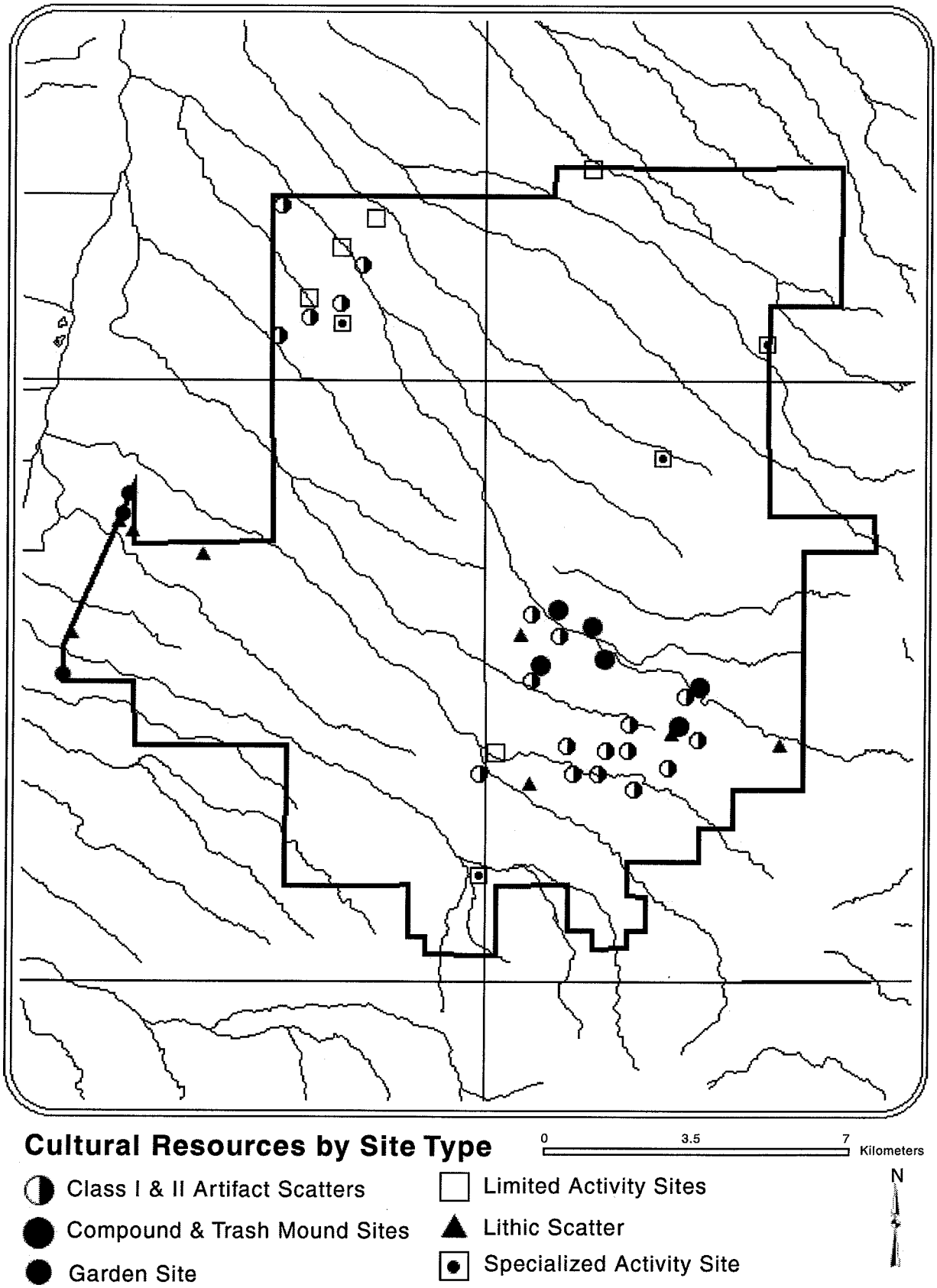

Figure 1—Archaeological site locations on the Santa Rita Experimental Range.

Four agave fields were recorded on the lower bajada of SRER below 945 m (3,100 ft) elevation. Fields range from 391 to 10,000 m^2 in size with four to 18 rock piles per site. One agricultural site has a 60-m-long rock terrace. Buttery found no habitation sites near these fields and postulated that people living on or near the flood plain maintained them. Recent work on the western periphery of SRER (Jones and others 1998) shows that villages dating to the late pre-Classic and early Classic periods are within a mile of Buttery's agave fields.

Limited Activity Sites

Seven Hohokam sites, each with fewer then 25 artifacts, were scattered between the upper and lower bajada. These sites range from 12 m^2 to 6,360 m^2 in size and contain plain ware pottery and flaked stone artifacts. One of the sites has three unidentified decorated pot sherds. From this limited information no particular function can be assigned to these sites.

Habitation Sites

Over half of the sites recorded by Buttery on SRER (25 of the 46 sites) are identified as habitation sites. As the word implies, these are places where people built houses and lived seasonally or year round. To determine seasonal versus year-round habitation requires a multidisciplinary approach to many lines of excavated archaeological data, but habitation in the broadest sense is easily recognized without excavation from specific indices of artifacts and features seen on the surface. Buttery separated habitation sites into four categories based on the types of artifacts and feature exposed on the surface.

Compound Sites—By A.D. 1150 the Hohokam were building their houses within walled compounds. Compounds were made from solid adobe blocks or from upright posts intertwined with sticks and brush and bound together with adobe mud. Evidence of both construction methods are expressed archaeologically by remnant stone footings on the surface.

Two habitation sites on the upper bajada of SRER are classified as compound sites. One site has two small rock compounds with interior spaces of 48 m^2 and 108 m^2. Thirteen other segments of wall footing were also recorded including one footing 25 m long. The larger compound site has a rock footing nearly 40 m long with three attached perpendicular walls about 10 m long each. Two rectangular rooms are attached to the interior of this enclosure.

Besides hundreds of broken pieces of plain utilitarian pottery and a few decorated pieces, the artifacts on the surface of both sites include food-grinding tools and flaked-stone cutting, scraping, and piercing tools. The dates of occupation are tentatively placed after A.D. 1150 based on the Classic period compound architecture. A few pieces of Rincon Red-on-brown pottery, dated to between A.D. 950 and 1150, were found on both sites. Another pottery type called Tanque Verde Red-on-brown dated between A.D. 1150 and 1300 was found on one of the sites. Site area is based on the distribution of artifacts on the surface. The first site covers an area of 14,000 m^2, and the second, larger site covers an area of 105,340 m^2. The potential for buried cultural features on both sites is certain.

Trash Mound Sites—Villages occupied year round or seasonally over many years have locations set aside for trash disposal. After repeated dumping episodes in one location, trash accumulates into mounds, and if conditions are favorable, these mounds remain visible for centuries. On the upper bajada of SRER four villages were occupied for extended periods of times as suggested by the presence of trash mounds. Two villages have four trash mounds, and the two others each have one mound. Most of the mounds are only a few centimeters high and are identified by the presence of artifact concentrations, but the largest known trash mound on SRER covers 72 m^2 and is mounded 50 cm high.

Based on the distribution of surface artifacts, the four villages range from 70,000 to 200,000 m^2 in size. Artifacts scattered across these sites include plain utilitarian pottery, flaked-stone cutting, scraping, and piercing tools, and waste flakes and debris from toolmaking. Seed-grinding tools (manos and metates) and jewelry made from seashells are present. Three of the four villages have datable decorated pottery including Rincon Red, and Rincon Red-on-brown, as well as Sacaton Red-on-buff, indicating occupation between A.D. 900 and 1150. The earliest of the four sites has one trash mound with Santa Cruz Red-on-buff pottery placing its occupation between A.D. 875 and 950. With little doubt, these sites have archaeological deposits that include many buried houses and features.

Class I Artifact Scatters—Buttery used the term "Class I Artifact Scatter" to describe sites with three or more types of artifacts. These sites have no surface evidence of trash mounds, but a few have heavy concentrations of artifacts that may represent locations of trash disposal. The absence of trash mounds may have to do with the length of occupation, the intensity and type of use, or the rate of deflation. It is certain that some of these sites represent permanent villages with several houses, while others in this group may be small seasonal farmsteads with a few houses or ramadas. The surface areas of these sites range from 8,000 m^2 to as large as 306,000 m^2.

Plain utilitarian pottery, flaked-stone cutting, scraping, and piercing tools, waste flakes, and debris from toolmaking are present on most of these sites. Twelve sites have food-grinding implements (manos and metates). Dispersed unevenly among the 14 sites are seashell artifacts, carved stone jewelry, tabular agave knives, a stone axe, pottery spindle whorls, a quartz crystal, evidence of a cemetery, and rock pile clusters protruding through the surface.

Five of the 14 sites have datable decorated pottery. Rincon Red-on-brown dating from A.D. 900 to 1150 is dominant, followed by Rillito Red-on-brown (A.D. 875 to 950), and unidentified buff ware sherds.

Class II Artifact Scatters—Buttery grouped these four sites together because the artifact assemblages are limited to broken pottery and flaked stone. Plain ware (utilitarian brown ware) is the dominant pottery type on the surface of these sites. Rincon Red-on-brown on three sites suggests an occupation between A.D. 900 and 1150. Flaked stone is limited to flakes and cores (cobbles with flakes removed), hammer stones (tools for removing flakes from cobbles), and

cutting tools. One site has a single small rock pile of indeterminate function. These sites range from 14,000 to 95,000 m^2 in size, and although they are large sites, the surface artifact assemblages lack the variety usually found at permanent habitation sites. The proximity of Class II sites to washes and fans may indicate they were seasonal habitation sites that functioned as farmsteads.

Special Activity Sites

These four sites are diverse in function. The first is a plant-processing site where four mortar holes and four grinding slicks (bedrock metates) were created on exposed bedrock near the mountain pediment. In these locations, food products like mesquite pods were milled or ground into flour with stone pestles and manos. Buttery notes that the largest mortar hole is 15 cm in diameter and 9 cm deep. The four nearby bedrock grinding slicks each measure about 70 cm long, 30 cm wide, and 18 cm deep.

The second special activity site is located at Huerfano Butte, a small rocky hill in the northeast quadrant of the Range. Buttery notes that shallow bedrock forces ground water to the surface in a wash on the south side of the Butte. Exposed outcrops of granite on either side of the wash have 50 bedrock mortar holes and numerous smaller cupules, further suggesting that the location may have been a reliable water source at times. Along the same wash is a vertical stone surface with pictographs painted in red hematite. The paintings include human and animal life forms as well as concentric circles. A few plain ware and unidentified decorated pottery sherds and flaked-stone artifacts were noted in the area. As mentioned earlier, Huerfano Butte gained notoriety in 1965 when a young girl discovered an extensive prehistoric jewelry cache while on a picnic. While exploring cracks and crevices on the butte the young girl discovered a prehistoric bowl filled with turquoise and shell beads, as wells as carved bird and frog pendants. This discovery resulted in the first and only scientific journal article about the archaeology of SRER (Bahti 1970). The cached offerings, the red paintings, and the numerous food-processing features may or may not be related, but one can imagine that a reliable water source near, or on the surface, is an element that could bind all of the site's features together.

The third special activity site is associated with food processing. It is located on the lower bajada in an area experiencing deflation. The site is 98,400 m^2 in size, and within its boundaries are 34 rock piles, most of which are check dams. Some of the other rock features are hearths and roasting pits filled with broken and fire-charred grinding implements. Buttery recorded 70 manos, 5 metates, and observed several pestles. The pottery at this site is dominated by mostly broken plain ware, but four broken decorated sherds were noted, including Snaketown Red-on-buff (A.D. 650 to 900), Rincon Red-on-brown (A.D. 900 to 1150), and Tanque Verde Red-on-brown (A.D. 1150 and 1300). Buttery noted a dozen modified sherds, some ground round into spindle whorls. Buttery noted that the flaked-stone tools made from black porphyritic rhyolite were abundant and include flakes, scraping and cutting tools, and cores.

The fourth special activity site is located in Florida Canyon and was identified as a source of black porphyritic cobbles. These cobbles were broken to test the quality of the stone for toolmaking. Some material was used on the spot to make tools, but it is also likely that cobbles were collected and taken elsewhere for use (see "Lithic Scatter" above). This site covers 70,000 m^2 of land. The discovery of an Archaic triangular biface tool along with plain ware Hohokam pottery suggest a long history of use. Every habitation site on SRER contains stone artifacts made from black porphyritic igneous rock, and as indicated earlier, Florida Canyon is not the only source for this material. Other drainages certainly have similar deposits of stone as do the lower bajada Holocene fans and ridges (Jones and others 1998).

Settlement Pattern

The pattern of Hohokam settlement on the northern slopes of the Santa Rita Mountains reflects both environmental risks and opportunities. Settlement will be examined in its relationship to the availability of resources on the upper bajada, middle bajada, and lower bajada of the Range.

Upper Bajada—Finding large numbers of Hohokam sites in upper bajada locations is a common pattern in the basin-range country of the Sonoran Desert, particularly where mountains rise above 1,219 m (4,000 ft) in elevation. The Santa Rita Mountains rise just over 2,881 m in elevation (9,453 ft), and the bajada slopes around the entire base provide many opportunities conducive to human settlement. Buttery indicates that 63 percent of the Hohokam sites on the Range are located on the upper bajada between 1,097 m (3,600 ft) and 1,341 m (4,400 ft) above sea level. Here, there is enhanced precipitation from orographic rainfall, sufficient elevation to lessen frost from cold air drainage, surface water, and bedrock water catchments. The bajada itself offers plant foods like mesquite pods and cacti fruit, and proximity to the mountain provides access to a rapid succession of plants and animals used for a variety of purposes, including food, clothing, and shelter.

The Hohokam living on the northern side of the Santa Rita Mountains depended on the relatively abundant local precipitation for domestic and agricultural use. The uplift of moisture-laden air passing over the Santa Rita Mountains delivers predictable precipitation to the mountain peaks, provides perennial surface water in canyons, and heightened chances for direct rainfall on the upper bajada in the winter and summer months, probably more so than on the valley floor. At the mountain front, Holocene sediments over bedrock are typically no deeper than a few meters; accessible water tables at the mouth of Box Canyon and Sawmill Canyon and in nearby ephemeral drainages were important factors in settlement location.

Upper bajada agriculture—Bottomlands with high agricultural potential are not evenly distributed along Box and Sawmill Canyons but vary with factors such as width and morphology of the flood plain, water-table depth, watershed size, and drainage gradient. The importance of such acreage for supporting relatively dense populations is indicated by the locations of large habitation sites along those stretches of Box Canyon and Sawmill Canyon suitable for flood plain fields. Buttery suggests that the water may have flowed in these canyons continuously in the prehistoric period.

The Holocene soils on the broad upper bajada terraces between major washes are also suitable for agriculture.

> The surface runoff would have easily infiltrated the sandy Holocene soils and remained close to the surface because of the underlying Pleistocene clay soil. When the water reaches the clay soil, it would begin to move laterally. At the point where the sandy soil becomes shallow or pinched out, it is likely that there would have been free water on or near the surface, thus creating temporary seeps following above average winter precipitation.... (Buttery 1987: 92).

Between 1,097 m (3,600 ft) and the mountain pediment, Buttery noted locations where moist conditions near the surface caused lush growing condition for local gasses.

Middle Bajada—The middle reach of the Range's bajada was not a place of settlement because drinking water was inconveniently distant at either the Santa Cruz River below or at the mountain edge above. As Box Canyon and Sawmill Canyon drain downhill and cross into the mid-bajada, surface flow tends to diminish or disappear in channels through infiltration into increasingly deep valley fill. The lower limit of habitation sites on Box Canyon and Sawmill Canyon probably mark the downslope extent of significant surface flow from all but the largest precipitation events following major storms.

Many small drainages with bajada catchments are sufficiently shallow that farmers from upper and lower bajada settlements could have successfully farmed the middle bajada by diverting storm water into fields. However, water would have been available only in cases of storms directly over the watershed, a relatively unpredictable event compared to higher elevation precipitation triggered by uplift of air over the mountains. At this time there is no archaeological evidence suggesting agricultural use of this zone.

The vegetation regimes seen on the Range today probably mimic to some extent the Range around A.D. 1150, when the prehistoric population was at its highest. If there were any differences, it is in the frequency of native trees and plants seen today as opposed to the presence or absence of these species in the past. Within the Tucson Basin, analysis of charcoal from 21 roasting pits dating from A.D. 1150 to 1300 (Fish and others 1992) and from a single roasting pit dating from A.D. 894 and 1148 (Van Buren and others 1992) shows abundant fuel woods of mesquite, ironwood, and palo verde, all consistent with the vegetation seen in the same locations today. It is likely that exploitation of annual and perennial plants in the middle bajada was frequent and shared by the people living above and below this zone.

Lower Bajada—Buttery indicated that 37 percent of the sites on the Range are below 945 m (3,100 ft) and include small agave gardens, lithic scatters, a plant-processing site, and five habitation sites. Lower bajada habitation sites are linked to the flood-plain community. Here water in the Santa Cruz River, and at springs like those at Canoa, provides domestic water sources. Like elsewhere, mesquite, cactus, and other annual and perennial plants provided food resources. Hardy upland agave plants also were transplanted to lower elevation gardens, cultivated, and successfully propagated for food and fiber on the gravel ridges overlooking the flood plain.

Low bajada agriculture—Alluvial fans, composed of outwash sediments from the uplands, coalesce on the lower bajada north of Box Canyon. Gentle slopes provide an active depositional environment and controllable water flow. In these situations flood waters following storms provided both moisture and simultaneous enrichment for crops in the form of suspended nutrients and organic detritus. The clustering of habitation sites at the lower limits of alluvial fans on the Range mirrors similar patterns throughout the Santa Cruz watershed.

Hohokam Community

The archaeological survey conducted by Buttery covered approximately 19,700 ha (8,000 acres), or a 15-percent sample of the 146,000 ha (53,159 acres). Of the 46 archaeological sites recorded, 25 are habitation sites representing places of permanent or seasonal habitation by the Hohokam people. This sample of area and sites provides sufficient information to predict with some confidence that many more Hohokam sites are present on the Range. The majority of the recorded Hohokam habitation sites were occupied between A.D. 900 and 1150, and at least two were occupied until A.D. 1300. As indicated in the cultural history section of this paper, the Hohokam organized into communities with central sites with public architecture at their core. There is little doubt that the dense Preclassic population on the Range is part of one or more communities. This suggests that a central site with a ball court, a form of Hohokam public architecture associated with Preclassic communities, should be found somewhere on the Range probably in an upper bajada location. There is insufficient information on Hohokam Classic period sites, with only two recorded at this time, to understand their place and relationship to other sites.

Concluding Comments

Cultural Resource Management on the Range

Preservation of archaeological resources for scientific investigation outside the Range is not possible except in rare instances. Since 1987, over 29,600 ha (12,000 acres) of land has been inspected for archaeological sites on the western and northern periphery of the Range, mostly as the result of enforcement of the Pima County Cultural Resource Ordinance (Sec. 18.81.060,B.10). These inspections resulted in the recordation of over 400 archaeological sites, but unfortunately only a small portion of these sites will be set aside for preservation in perpetuity. Those sites not fully protected will be subjected to compliance-related archaeological investigations. Unfortunately, the cost of scientific study is very expensive, and all work is more often than not geared to collecting samples that never capture the full breadth and understanding of how people lived and survived in these arid lands.

This is why cultural resources inside areas like the Santa Rita Experimental Range are so important to protect. Within the Range lies important information about the prehistory of the region and the history of homesteading and ranching. Equally important is archaeological information about the history of range experimentation itself, and how early scientific research was carried out. A record of this scientific use

is embedded in the landscape and will not be found in the written or photographic history of the Range. Beyond the humanistic elements of archaeology, sites on the range contain vast amounts of information useful to studies of climate, plant and animal ecology, geology, and geomorphology.

We are rapidly approaching the time when the Santa Rita Experimental Range finally and forever will be enclosed on three sides by a dense urban landscape. High-density residential communities will create new challenges for the Range and will require an increased commitment on the part of the Arizona State Land Department, the Arizona Game and Fish Department, the Arizona Department of Agriculture, and the University of Arizona to manage and monitor the health of the Range.

A complete inventory of SRER cultural resources will facilitate the implementation of future range projects, to include improvements to the land needed in the normal course of use and during the selection of lands for scientific study related to the principal purposes of the experimental range. With the inevitable growth around the periphery of the Range, inventories of cultural resources are necessary for the sheer purpose of protecting them and for assessing impact from allowable public use within the current context of State law and State Trust lands policy.

Cultural resource inventory can coincide with the teaching mission of the University of Arizona. Opportunities for students to design and implement research on the scale of the work accomplished by Buttery (1987) and Fish and others (1992) abound on the Range, and can co-occur and even complement and contribute important information useful to the research objectives of the modern day range ecologist. With that said, the 100th Anniversary of the Santa Rita Experimental Range also presents an opportunity for constituents with common interests in the survival of the Range to develop a long range plan that binds public and scientific interest in this open space.

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M Scott Leonard
<msleonard@raytheon . com>

03/31/2008 02:24 PM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Mine Comments

I am writing to let you know of my extreme dissatisfaction with the Rosemont mine project. I am not a "tree hugging" liberal but I am someone who appreciates natural beauty and hates to see it destroyed. It sickens when I think about what that area will look like in 5 or 10 years from now. What sickens me even more is that the US Forest Service seems to be supportive of this mine. Instead of fighting to protect our natural resources you seem to be supporting their destruction. I guess I had miss-judged you guys, I thought you were protectors of the environment, but it turns out you are just puppets for big money FOREIGN corporations to control and help them sell their environmentally destructive projects to the public. You guys should be really proud, one day you can take your grand kids up to the Rosemont mine area and show them the devastation and tell them how you helped push this mining project down the throats of the our community.

I hear the Forest Service Representatives touting the economic benefits that will come to our area. Well isn't that nice of you to be looking out for our economic future, just think how much money we could bring into our area if we were to strip mine all of the surrounding mountains in the Tucson Valley, we would all be rich, yippee, that would be great.

I hear the Forest Service Representatives preaching about how we need copper to build hybrid cars. You know damn well where most of this copper is going, straight to China. This is not about protecting the environment by supplying copper to build hybrid cars, this is about lining the pockets of huge wealthy FOREIGN corporations with lots of money, and you know it.

What about water? In case you hadn't heard we live in a desert and do not have an infinite supply of water. I guess with the right amount of money you can buy whatever outcome you desire from a water resource study.

What about I83? Say good-bye to that nice pleasant country road and say hello to a busy, dusty freeway loaded up with heavy truck traffic.

Let me just say that I know that the majority of the USFS employees do not support this mine, or at least I like to think so, but unfortunately there seem to be many in the USFS that do. It is a shame that we as a community seem to be powerless against corporate corruption and greed.

Thanks for your time, Scott Leonard

ps Please add me to your mailing list

"Steve Taylor"
<staylor1000@msn.com
>

03/31/2008 12:24 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc: "'Steve Taylor'" <staylor1000@msn.com>
Subject: Rosemont Copper Mine

To Whom It May Concern:

I live in Santa Rita Acre Estates, a neighborhood that will be adversely affected by the proposed Rosemont open pit copper mine. Over the last couple years, I've been riding my mountain bike (bicycle) on jeep trails northeast of the Santa Rita Mountains and of the proposed mine. Throughout the region, there are several watering holes that I presume ranchers built years ago. I haven't seen any cattle, but I have seen deer, crane, coyotes and a variety of other birds and wildlife drinking from these holes. Just a few years ago, some of these watering holes, or small lakes, two of which I believe are called Twin Lakes and Fagan Lake, were completely filled, and at times, overflowing. However, since more homes have been built in the region and drought-like conditions now exist, these lakes are completely dry or near so. I've attached photos to show you Fagan Lake ~ 2 years ago and Fagan and Twin Lakes two days ago.

I'm sharing these photos with you to help convey a serious issue that southern Arizona (and many parts of the world) is now facing, i.e., potential water shortages. I can elaborate further on this issue, but suffice it to say that if the Rosemont copper mine is allowed to proceed, it will require water that we can hardly afford to waste. As you know, ground water continues to be depleted throughout Arizona. Moreover, CAP water is not a sure thing (the mine proposes replenishing the ground water it uses with CAP water, but in an area not even near the mine). In fact, an article published February 13, 2008 in The Arizona Republic, said that scientists working at the Scripps Institution of Oceanography in San Diego, have estimated that there is a 50 percent chance Lake Mead will run dry by 2021. Sure the mine may generate several good paying jobs for miners, tax dollars for the local communities and abundant wealth for its investors, but is accelerating the depletion of one of southern Arizona's most valuable resource worth it? We need to take a long term perspective for the benefit of future Arizonan's, not a short term one for the benefit of a relatively few people.

Finally, while I am conservation minded, I am also an engineer / business consultant. So while I am a proponent for businesses in general, I am not a proponent for businesses that destroy our environment and the livelihood of future generations.

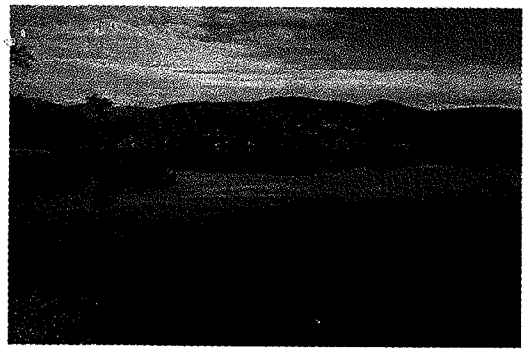
Sincerely,

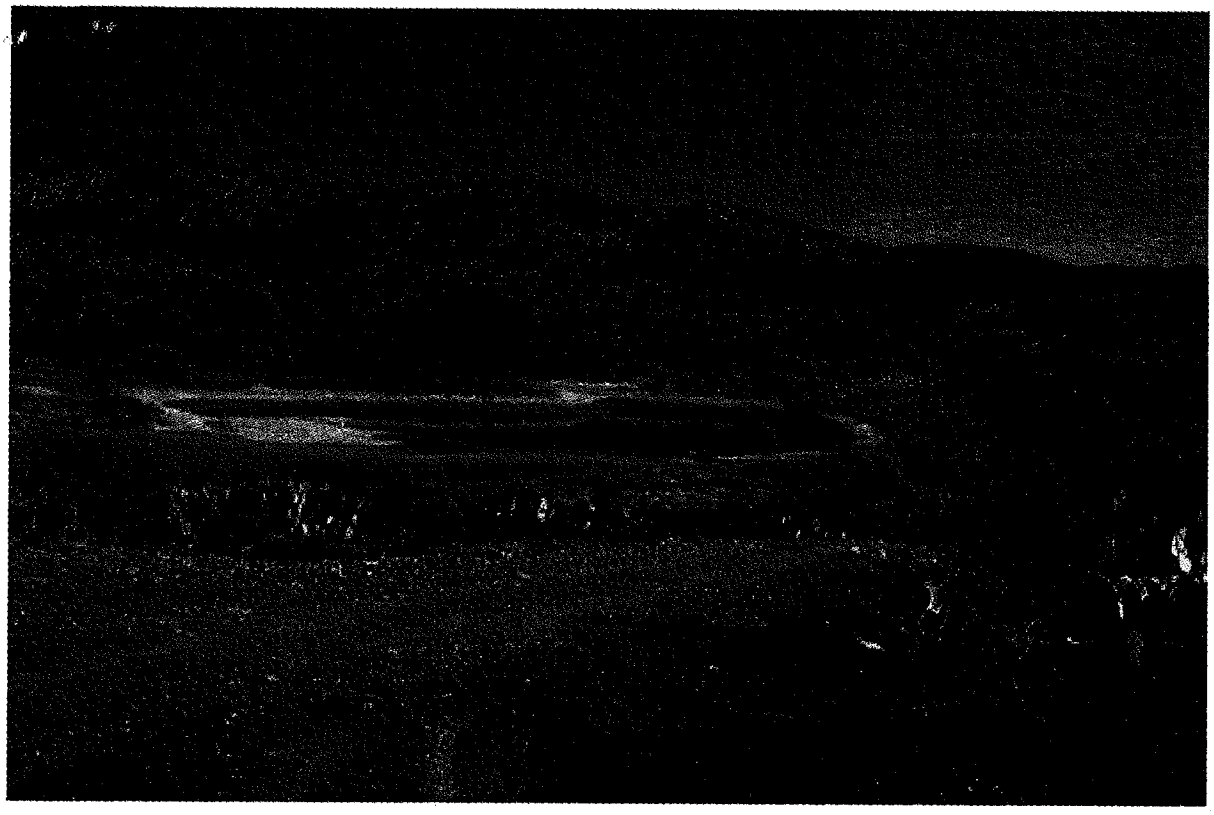
Steve Taylor

SATBC

Steve A. Taylor, MBA
Principal
SAT Business Consulting
(520) 270-6309

FAGAN LAKE FULL.jpg Twin Lakes Now.gif Fagan Lake Now.gif





"Kathy G. Stewart"
<stewart@pire .org>
03/31/2008 12:18 PM

To: <Comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont Copper Project

Dear Ms. Derby -

I appreciate the opportunity to comment on the proposed copper mine. My view can be summarized in six syllables: Are they out of their minds??!!!

Once again we are being asked to sell our birthright of beautiful landscape, rare species, and precious water for the mess of potage being offered by Augusta. For questionable economic gain, these interlopers from Canada want to rape, pillage, and lay waste to a beautiful swath of our state within sight/hearing/smelling distance of a million residents. Their assurances of environmental care and responsibility are ludicrous on their face. Ever scarcer water resources will be lost. The cost to all of Arizona for generations to come is incalculable and forever. The benefits are trivial and short lived.

The idea that the Federal government would even think of allowing MY land to be used in this scheme is appalling.

Please, please, please do not let this happen!

Sincerely,
Kathryn Stewart
134 North Understory Lane
Tucson, Arizona 85748

"mailbox@hughes .net"
<dhanna 5303

03/30/2008 08:34 PM
Please respond to
"mailbox@hughes.net"

To: comments-southwestern-coronado@fs.fed.us, neal790@yahoo.com
cc:
Subject: ROSEMONT MINE PROPOSAL

PLEASE READ. THANKS. Rosemont Mine Letter.doc

U.S. Forest Service, Coronado:
Reference to Rosemont Mine

I want to thank you for this opportunity to comment on the proposed Rosemont copper project. Unfortunately the process was initially flawed from the outset. The relative short lead time; compounded by scheduling the initial three meetings , scheduled during the spring break ,could leave a lot of citizens in the dark. While attending two of the meetings I expressed my concern to forest service officials about the lack of a formal presentation to explain to concerned citizens in attendance the NEPA process . We needed to be aware of the NEPA process and how important it is to cover all issues during the scoping phase in order to be addressed later, either administratively or possible civil litigation! I believe the Forest service should slow the process down . This would allow for more informative meetings and giving Sonoita a meeting , in light of the ill fated Patagonia meeting ,which was about citizens being frustrated with and misunderstanding the process.

My wife and I (Neal) live approx.2.5 miles from the proposed Rosemont Mine site. We live on Hilton Ranch Road, adjacent to the Davidson Canyon drainage , downstream from proposed mine site. We own approx. 29 acres since 1979 and have a domestic well located on said property. We have built our DREAM home several years ago, after living in a single wide trailer for over 30 years. The approval of proposed mine will devalue our home and property in an already depressed market, jeopardize the water we drink and contaminate the air we breathe The **AIRBORNE pollution** will be worse than the WET tailings which is bad enough, just look over to the west at wet tailings overlooking Green Valley and the amount of dust they have admitted for years . The plan at Rosemont Mine is to use **DRY tailings**. This type of tailings use less water , but creates **more toxic dust.** According to Jamie Sturgess this is a relative new process with one mine in the U..S. and one in South America .

The reasons are numerous, here are a few: **AIR** and **WATER pollution**, increased **commercial traffic**, transporting **hazardous materials on the already dangerous, narrow windy SR83, disruptive noises & dust generated from the mine site & property 24-7, which includes daily blasting.**.

The afore mention toxic dust will be transported by the prevailing winds to my home and neighbors and continuing to large population areas . It is understandable at first glance water conservation would be considered until you factored the increase dust originating from the toxic tailings. This would place my wife at greater risk since she has asthma.

Water pollution will come from breaching or leakages of the tailings and leach pads . The leach pads will have sulfuric acid as a bi-product of the leaching process and will leak over time even when using liners and monitoring wells This is very troubling since the mine site is upstream to my residence and the population of Tucson. **Even recent history of leaking leach pads and the following devastation has happened in THIS century.**

CONCLUSION:

Diane and I would not be able to co-exist with the mine so close to our residence with all the aforementioned **sources of pollution adversely affecting her health**. **We are advised by her physician to relocate if the mine goes thru**. We moved to Vail in 1972 in order to minimize the effects of urban pollution for Diane and myself. After building our Dream Home ,and preparing for retirement at age 60 . We now are facing relocation. If this propose mine is approved!! It will **devastate us economically**!

The population of Metro- Tucson has literally grown up around the mine site in relative close proximity. The city limits of Tucson proper goes east of Vail Rd., north of I-10., which is only a short distance. The ECONOMIC IMPACTS of the mine will weigh heavily on the health of our Citizens , financially on our extremely large tourist industry and diverse recreation. Hopefully you will take care as you consider OUR FUTURE , during this process. We appreciate YOUR efforts in this endeavor and wish all of you well !!!

Sincerely
NEAL and DIANE HANNA

"Peggy Wenrick"
<pwenrick@comcast .ne
t>

03/30/2008 05:32 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont Copper Project EIS

Team Leader
Rosemont Copper Project
Coronado National Forest

Attached are my comments and questions relative to the above-mentioned EIS

Peggy Wenrick
612 1 N. Mina Vista

Tucson, AZ 85718

Rosemont Copper.doc

Team Leader
Rosemont Copper Project
Coronado National Forest

To Whom It May Concern:

I request that, in order to evaluate the Rosemont Mine Plan of Operations, you consider the following points:

- **Water quality and quantity:**
How will surface water downstream of the site in Cienega Creek and Davidson Canyon be protected in both quality and quantity of flow?
How will nearby water wells be protected from pollutants in groundwater and drawdown within the underground reservoir?

- **Toxic releases:**
EPA has reported for Arizona a 52% increase of toxic releases (from 2005 to 2006) due primarily to on-site land disposal in the metal mining industry. Air emissions increased 4% to 4.5 million pounds; water releases increased from 6,300 pounds to 688,000 pounds and off-site releases rose by 122% for the same period. Arizona ranked 17th in the nation for total toxic releases. Metal mining and metal industries accounted for 87% of total releases and 94% of on-site land disposal.

How will toxics leached from waste dumps or treatment facilities be prevented from entering ground and surface waters?
How will residents, wildlife, and vegetation be protected from airborne and water-born toxics?
What will be the composition of airborne toxics and particulates? Will these be deleterious to human health?

- **Safety and infrastructure of roadways used by heavy equipment carrying dangerous materials:**
How will damage to roadways used by heavy equipment be mitigated and paid for?
How will the safety of travelers be assured considering the frequency of heavy equipment use of roadways?
What will be the economic burdens to the local communities of the mine and transport operations?

- **Wildlife and native vegetation:**
What wildlife will be affected by the mining operation? How many threatened and endangered species will be affected?
How will habitat be protected and wildlife corridors be maintained as functional?

- **Cumulative impacts:**
What will be the cumulative impact on people and wildlife of the mining and transport operations?

Thank you for this opportunity to comment on and question the proposed Rosemont Copper Project EIS.

Sincerely,
Peggy Wenrick
6121 N. Mina Vista
Tucson, AZ 85718

Joe Brown
<joe.brown1@verizon.net>

03/30/2008 02:11 PM

To: Comments-southwestern-coronado@fs.fed.us
cc:
Subject: Endangered Area Santa Rita Mountain Area (Southern Arizona)

To whom it may concern,

I have read some disturbing information that Augusta Resources is trying to start an open pit copper mine near Sarhuarita, Arizona. This a beautiful area of the state and much damage will be done. The process also releases acid, sulfur dioxide, mercury, and lead into the environment. Besides destroying habitat it poisons the air and water; and, concentrates the radioactive elements already present in the rock. If released these pollutants are hazards to everyone living in the area. Please reconsider this venture.

Dr. Steve Chrisman was my neighbor for many years notified me of this. I live in Texas now but lived most of my life in Arizona. I hope I have sent this to the proper place. Joe Brown, joe.brown1@verizon.net

ktayloroz@comcast .net
03/29/2008 06:12 PM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Copper Project EIS

Jeanine A. Derby - Forest Supervisor,

My husband and I both enjoy Arizona very much. I lived in Tucson for 3 years and my husband lived in Arizona for 9 years, six of those in Tucson, and he graduated from the U of A as well. Since moving back to the Midwest in 1984, we have made several trips back to Arizona to visit family and friends, and to enjoy the spectacular scenery.
We were greatly saddened to hear of plans to open a copper mine in the Santa Rita Mountains. The impacts of mining on the landscape would be a huge detriment in our opinion. Some of the problems that would be created are as follows:

1.Large amounts of water will be required. Considering that the Southwest is in a prolonged drought, this doesn't seem to make much sense. Even if precipitation were at normal amounts, being a desert environment isn't conducive to another industry that is water intensive.
2.Runoff will certainly pose environmental hazards to ranches and property adjoining the mining property.
3.Additional roads and traffic (not to mention a smelter, if built) will extend air pollution beyond the Tucson basin.
4.Power lines will have to be installed and would detract from the natural beauty of the area.

Not only would these affect the human population, but the wildlife as well, not to mention cattle and other livestock for ranchers.
Another factor to consider is that the company proposing to open the mine is from Canada, therefore it has no real concern for the problems that will be created for the residents and visitors like ourselves.
Please consider our strong views on not allowing this mine when reviewing this action. As it states at the bottom of the Forest Service letter: "Caring for the Land and Serving People", I would hope you stand by this statement.

Respectfully,
Kelly and Kent Taylor
1033 E. Millview Cir.
Olathe, Ks. 66061

<cherdliska@coronafire.org>
03/29/2008 05:52 PM
Please respond to cherdliska

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: minning in Santa Ritas

Hello, My name is Charlotte Herdliska and I live in Corona de Tucson, just south of my home is the proposed Rosemont Mine in the Santa Rita Mountains. I am very concerned about our drinkning water - Simply put WE DO NOT have the water to support such an operation. Minning this area would be a environmental disaster to the water shed in Davidson Canyon, and the Scenic Santa Rita Range. I do not believe the profit outweighs the long term effects, in fact we need only look to past history to know this is bad for our area. Please SAVE OUR WATER!!!

Charlotte Herdliska

55 W. Vista Monte

Corona, AZ 85641

MICHAEL J PAUL
<m19soorkb@msn.com
>

03/29/2008 02:47 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Comments on Rosemont Mine

Attached herewith are my comments on the proposed Rosemont Mine. Thanks for soliciting public input.

Michael J. Paul
201 W. Calle Canon de Faber
Green Valley, AZ 85614

520-399-3506 USFS Letter - Comments on Rosemont Mine - 3.29.08.doc

TO: U. S. Forest Service
FROM: Michael J. Paul, 201 W. Calle Canon de Faber, Green Valley, AZ 85614
DATE: March 29, 2008

RE: Public Comments Regarding Augusta Mining's Proposal to Develop the Rosemont Mine

My wife and I attended the USFS Open House at the Green Valley Recreation Canoa Hills Center. I had the opportunity to speak with a couple of the USFS rangers there, and both suggested I write down my comments. Herewith are the comments I made.

PREFACE:

First, my background: I am a one-year-retired former Reliability & Maintainability (R&M) Engineer for the Oshkosh Truck Corporation in Oshkosh, WI. I spent 25 years involved with R&M, a portion of which involved R&M mathematical modeling and simulation for bid and proposals that Oshkosh put together to win military truck contracts. A goodly number of Oshkosh's trucks are serving our Armed Forces in Iraq, and I am proud to have been involved in the R&M evaluations at Aberdeen Test Center (MD) and Yuma Proving Ground (AZ). It was my job as the only R&M Engineer for Oshkosh to evaluate test results on behalf of Oshkosh and convince government evaluators that the R&M characteristics of our vehicles met the exacting requirements of the U.S. Government prior to their being fielded for use by our troops. In my job as an R&M Engineer, I performed 'predicted versus actual' comparisons between my R&M modeling and the actual test results.

My comments below reflect my 25 years as a mathematical person (B.A. and M.S., Mathematics) and as an engineering person (B.S., Agricultural Engineering-Power & Machinery).

COMMENTS ON THE ROSEMONT MINE PROPOSAL:

1. Each side in the 'debate' (those who back the mine, those who oppose the mine) brings to the table its elaborate mathematical models to support its position. Hydrologists model the water table, inputs to the water table, withdrawals from the water table, and proposed additions (CAP to Green Valley), and proposed withdrawals (Rosemont Mine for the projected 20-year mine life) to determine the '100-year water supply'. All these modeling efforts are 'scientific guestimates' (as my R&M modeling was), since no one knows for sure what the long term impacts of the Rosemont Mine will be (on the water table and on other environmental factors). There is one FACT that can be stated: The depth of the aquifer under the Santa Cruz valley is declining, and has been for years. Even the hydrologists cannot say with certainty that there is a 100-year water supply for residential use, even if there are no more draws on the aquifer than currently exist.

2. The watershed from which the Rosemont Mine intends to draw its water is the basin that drains into the Santa Cruz aquifer. The other big draws on this aquifer are FICO, Sierrita Mine, and golf courses. Residential draws are small in comparison to the aforementioned draws. Add the Rosemont Mine, and Rosemont will become one of the four leading aquifer draws, with residential draws being last. As a new resident of Arizona (March, 2007), having moved here from Wisconsin, I can say that there are other potential negative effects of the aquifer drawdown. Believe it or not, Wisconsin has declining underground water tables in the Town of Algoma adjacent to the City of Oshkosh, and the aquifer has subsequently become contaminated by the chemical arsenic (Please refer to the web link: http://www.wnrmag.com/stories/2000/dec00/arsenic.htm) which is being leached out of the substrate rock in that aquifer, making drinking water in the town unsuitable for drinking per federal drinking water standards. Homes in the town subsequently have to install expensive devices to remove arsenic from the drinking water before they can sell their homes. This is a FACT. Could a similar situation occur here?

(Again: When I say 'could', the modelers on each side of the debate will have their 'defensible' positions.

CONCLUSION

In the absence of absolute certainty, my position is that the Rosemont Mine should **not** be allowed to go forward. The balance of nature in the desert southwest in which we live is too fragile to withstand another large draw on the Santa Cruz aquifer, which we know for a fact is already declining, even without the mine. My job as an R&M Engineer allowed me to perform 'predicted (model) versus actual (as tested)' analyses. Such analyses were able to be performed, in general, in a 5-year timeframe between bid and proposal (in which my predicted R&M models were present), winning a contract, building trucks, testing them, and evaluating the actual R&M test results.

There is no such 5-year timeframe to evaluate 'predicted versus actual' results with respect to the Rosemont Mine. The timeframe between the predictions and the actuality are just too far into the future. Rosemont's rosy modeling predictions are obviously liberal. We cannot wait 100 years to determine which side in the debate is correct. We MUST choose the conservative position: NO MINE!

Thank you for soliciting my remarks. If you wish to reach me by telephone to discuss this matter further, my number is: 520-399-3506.

/s/ ***Michael J. Paul***

"Terri Contapay "
<tcontapay 50@comcast
.net>

03/28/2008 10:18 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont mine

Forest Service:

I have already filed my comments. In various conversations with others, I think people have a difficult time visualizing out this mine will affect the landscape and in future meetings, "before" and "after" slides should be presented. . How does a mining company restore -- revegetate a whole mountain? It can't. There is no other answer.

Terri Contapay

<rcmaness@cox .net>
03/28/2008 10:17 PM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Re:

The mine really does upset me. I don't think anything I say hear will make a difference but, I'm hoping. If you add my grandfather and great grandfather, we're talking a hundred years in this area. It's awsome, ny wife really loves this area. We don't want to see an area like this trashed. We can deal with the clean up from the illegal immagrants. We bring trash bags with us everytime we're out but, this is even worse.You can't do anything about a mine and they may promise but, there's going to be a major impact here.

Please don't allow this,

Roger Maness
---- comments-southwestern-coronado@fs.fed.us wrote:
> Your document was received by the comments-southwestern-coronado mailbox.
> This is an automated message, please do not reply. If a response is
> required by the Forest Service, it will be forthcoming.
>

"Francine Shacter "
<francine@skilfor .com>
03/28/2008 08:36 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont mine

I oppose the Rosemont mines.

Francine Shacter
Tucson, Arizona

No virus found in this outgoing message.
Checked by AVG.
Version: 7.5.519 / Virus Database: 269.22.1/1348 - Release Date: 3/28/2008 10:58 AM

<rcmaness@cox .net>

03/28/2008 07:37 PM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject:

I honestly hope, that none is seriously thinking about a mine in Rosemont. This beautiful contry. I have been hunting Coues Whitail Deer and Javelina for 35 years. My father hunted it for 30 years before that and now my sons do. We also hike this area and camp. If your not convinced as to the damage this mine will cause, look around at the other mines in the area, that weren't suppose to cause a major impact on the invironment. I think the big white scar on Mt. Fagan's a good example. What's it going to do to Hwy 83, I-10? I honestly don't believe any statement that claim no impact on the National Forest.

Please do not allow this.

lmcatanz@aim .com
03/28/2008 03:41 PM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Mine

The Rosemont Mine will occupy approximately 4,415 acres, with approximately 995 acres on private land, 3,345 acres on federal lands managed by CNF and BLM, and 75 acres on state trust lands.The mining industry has already polluted and destroyed enough of Arizona. We must stop Augusta Resource Corp from destroying the Santa Rita Mountains and vote NO on the Rosemont Mine project.

This mine will ruin the scenery, deplete the water supply of residents, destroy wildlife and pollute the area. The noise from the blasting will be intolerable. This area is a recreational area with residents nearby. It is a unique and important bird and wildlife habitat area.

HY 83 is a 2 lane road without shoulders. Who is going to fund road improvements?

This mine would have no lasting benefit to the state of Arizona or its citizens. The short term benefits will only be seen by the mining company and a few employees at the expense of Arizona taxpayers and all who visit this beautiful state. And the negative consequences of mining activity in the Santa Ritas will last forever! The destruction of the mountains can never be repaired.

A tour of the mining pits and mine tailings west of I-19 (take a look at a map of this area on Google) should be required of all who vote on this horrible proposal to allow a Canadian company to rape our lands and pollute our air.

The financial enrichment of a Canadian company and their investors does not equal the total destruction of a rare and irreplaceable natural resource.

We urge you to withdraw Coronado National Forest lands from future mining and preserve our National Forest and Parks.

LaVerne Catanzarite
2201 N. Avenida del Polen
Green Valley, AZ 85614
760-835-3377

Planning your summer road trip? Check out AOL Travel Guides.

"Richard Calabro "
<r.a.calabro@att.net>
03/28/2008 01:19 PM
Please respond to
"Richard Calabro"

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Typo Fixed Proposed Rosemont Copper Project EIS.

Date: Friday, March 28, 2008
From: Richard A. Calabro
To: Rosemont Team Leader
Subject: My Comments on the Proposed Rosemont Copper Project EIS.

The proposed Rosemont Copper Project would be located 30 miles southeast of Tucson, in Pima County, on approximately 995 acres of private land, 3,670 acres of National Forest land, 15 acres of land administered by the Bureau of Land Management, and 75 acres of State Trust land. Following are my reasons for asking that you Please deny the request for the proposed Rosemont Mine to use 3,670 acres of our public Coronado National Forest land. Some might not be relevant to the limited focus of the EIS Scoping. Many are. I will let you decide.

Pima County commissioned and submitted a Hydro Geological Study to the Coronado National Forest that raised the threat of surrounding groundwater and surface water depletion from pumping out an open pit copper mine, as well as potential leaching of pollutants into groundwater. The EPA reports that in 2005, metal or hard rock mining in Arizona released over 39.4 million pounds of toxins.

Of the $117 million Augusta claims in community commitments, $67 million of that is actually their costs associated with the business of mining. The rest is a poor tradeoff considering loss to tourist, birding, and recreation industries. Augusta claims 350 jobs, but mining jobs are transitory, being part of the mining bust and boom cycle. In reality, the mine will move jobs from other sectors and out again. Mines close, and jobs that depend on them are gone.

The local and self-sustaining economies of tourism, birding, and recreation would be negatively impacted. The Rosemont Valley area of this proposed mine is one of the most popular and diverse recreation areas that I have experienced. On one hike on a Sunday I observed hikers, campers, off road motorcycles, and all terrain vehicles. Nearby Madera Canyon is a world class birding area, and Cienega Creek Preserve, a Pima County Park, is a water stop for migrating birds. Waters from Davidson Canyon flow into this preserve. The exposure to toxic runoff into Davidson Canyon from this proposed project is extremely high. Augusta wants to fill in Barrel, Wasp, McCleary, and Schofield Canyons, yet claims no impact to the Cienega Creek watershed.

The quality of human and other life in the area is threatened by light pollution, noise pollution, air pollution, water contamination, the destruction of wildlife habitat, loss of wildlife movement corridors, native plants and ecosystems, the elimination and restriction of biking, hiking, hunting, camping, and bird watching, and the traffic hazards created by the trucks, especially for the many school buses and school children getting on and off the buses. Increased truck traffic of 600 to 700 per week means that trucks will be traveling at an average of one every fifteen minutes, 24

hours a day, 7 days a week on local roads and highways. The Corona de Tucson Fire Department is the only rescue squad within 20 miles of this proposed mine. The fire chief is certain the wrecks would be quite deadly. U.S. Highway 83 would no longer be scenic, whatever its designation.

This proposed 3rd to 4th largest open pit copper mine in the U.S., a hole one mile in diameter and a half mile deep, the mine tailings proposed for the 3,670 acres of our public National Forest land, would cause irreparable devastation to the scenic landscapes and view sheds of these Santa Rita mountains, the public lands the Forest Service is charged with protecting. The Forest Plan for the Coronado National Forest mandates the best use for lands in the public domain. There are clearly far better uses for this land. Namely the use that is currently in place and protected.

The Sky Islands of the Coronado National Forest are a globally recognized biodiversity hotspot. The Santa Rita Mountains and surrounding desert and grassland seas are world renowned for their diversity of birds, reptiles, amphibians, bees and plants. Please continue to protect it in the admirable way that you have. It is difficult, but I know the U.S. Forest Service, with whom I have worked as a trail maintenance volunteer with other members of the Green Valley Recreation Hiking Club, helping them remove huge logs from the Amphitheater footbridge in Madera Canyon with the assistance of the Elephant Head Volunteer Fire Department after the 2005 floods, is equal to this new challenge.

Richard A. Calabro
3055 S. Placita Del Avestruz
Green Valley, AZ 85614-1000
Tel. 520 648-0624
Fax 520 648-0647
e-mail: r.a.calabro@att.net

"Lucinda Navarre "
<grambo39@mindspring.com>

03/28/2008 10:17 AM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: mining

There is absolutely NO valid justification for any new mine activity in Arizona...

As for Augusta; May I suggest they capitalize on massive known mineral reserves in western Canada and Yukon Territory.

Lucinda J. Navarre
POBox 706 36 Pony Trail Dr.
Sonoita,Az 85637

Steve_in_Arizona
<nitroxer2003@yahoo.com>
03/28/2008 09:10 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Rosemont Mine NEPA Scoping Comment #4 CAP Water

NEPA Scoping Comment. Regards use of CAP Water and Pima Mine Road CAP Recharge facility.

Conclusion from reading and study: There isn't enough water available to open another copper mine and sustain the current populations and industry in the proposed mine area.

Discussion:

Please consider the following quotes, comments, and questions.

Rosemont's Claim:

(Quote: Rosemont Plan of Operations.pdf)

"Rosemont Copper has no legal obligation to replace any of the water it will produce for the operation of the mine. No other mining operation in the region has previously done so. However, Rosemont has made a commitment to the local community to utilize available CAP water to recharge 105 percent of the total water production over the life of the Project. The recharge will be within the Tucson AMA, and as close to the water production site as possible. The total life-of-mine usage is currently estimated to be 100,000 af, resulting in a recharge commitment of 105,000 af.

Rosemont Copper began recharging CAP water in the Santa Cruz basin in 2007, with contracts in place to recharge 15,000 af at three state-permitted underground storage facilities, which include Pima Mine Road near the terminus of the CAP aqueduct, and the Lower Santa Cruz and Avra Valley sites near Marana. Rosemont Copper contracted to utilize all of the available capacity at Pima Mine Road (about 600 af in 2007), with the balance to be stored at the Lower Santa Cruz and Avra Valley sites. Rosemont plans to continue this water storage program for the next several years. A volume of water equal to several years of mine water supply will likely have been stored by the time Rosemont mining operations begin.

Pima Mine Road is the state-permitted underground storage facility closest to Site 1. Because available capacity at this facility may remain limited for the foreseeable future, Rosemont Copper has also begun evaluating construction of a new recharge facility in close proximity. Although construction and operation of a nearby recharge facility is not required by law, regulation, or any contractual obligation, Rosemont Copper is committed to recharge available CAP water at groundwater storage facilities close to its production wells to lessen impacts of mine water production on local water users."

Comments: The recharge facility exists. Rosemont Copper intends to utilize "all available capacity" for their water needs and withdraw water from the well site as recovery water; that is banked water. It further states "Rosemont Copper started recharge in 2007." (Is this a fact in

evidence?)

Note intended % usages of recharge water; excluding ASARCO which already gets CAP water in competition with the Pima Road recharge facility; as, it gets the water ahead of the Pima Road recharge facility, hence completes for CAP water. (Is available CAP water reduced by ASARCO competition for water? And, is this justification for a new copper company doing the same thing?)

Several questions should be answered in the name of the residential water customers who in good faith supported the building of the Pima Road CAP recharge facility and who may be asked to subsidize expansion of recharge due to scarce water and the plans of the Rosemont Mine (Rosemont Plan of Operations.pdf)

1. If Tucson didn't need the recharge facility, why did they build it?

2. Is there that much extra water that we have it available and will sell it to just anybody with money?

3. Will we need extra water to off-set what Rosemont buys?

4. Will another CAP recharge facility be needed to off-set the loss of the Pima Road Road recharge facility from the public needed water? And, will the public have to subsidize the building of such an extension at a surcharge to residential customers; as suggested (Attachment: Long-Term-Green-Valley-Water-Supply.pdf).

The Tucson Board of Governors has come out opposing a new mine and in facts sponsors a federal law prohibiting further mining of the Santa Cruz area. The Long-Term-Green-Valley-Water-Supply pdf was prepared by professional engineers and contains information used as part of the Tucson Board of Governors support of this law now being considered by Congress.

Since it is the opinion of the Tucson Board of Governors that this law is necessary for the sustainability of the current public and private sector. I feel no new mining should occur until Congress decides its law excluding the Santa Cruz from further mining. I also feel Rosemont Mine is too new to the process of obtaining a mine to be grandfathered or excluded from such a law should it come into effect.

Stephen Chrisman
Sahuarita, AZ

Be a better friend, newshound, and know-it-all with Yahoo! Mobile.]

Long-Term%20Green%20Valley%20Water%20Supply%20.pdf Rosemont Plan of Operations.pdf

Same attachment as earlier letter. (Plan of Operation)

MEMORANDUM

Date: October 2, 2007

To: The Honorable Chairman and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

Re: **Long-Term Green Valley Water Supply**

Introduction

Green Valley is located in the Upper Santa Cruz Basin near the edge of the Tucson Active Management Area. The primary source of water for Green Valley is from groundwater within the Santa Cruz Valley. Two sources of renewable supply are in the vicinity of Green Valley. One source, reclaimed water, is fully committed to golf course irrigation. The other renewable water source is Central Arizona Project (CAP) water. The CAP delivery system terminates at Pima Mine Road, ten miles north and down-gradient of Green Valley (from the intersection of Continental and Interstate 19). Cooperative and coordinated efforts are needed to deliver CAP water to Green Valley.

Attached are two documents prepared by staff. Attachment A is a report entitled *Evaluation of Sustainable Water Supply Options in Green Valley*, which summarizes the current and projected water use in the Green Valley area and evaluates the costs of water supply options based on an equitable share of capital costs according to water use. Attachment B is a water supply issue paper describing desired outcomes and potential solutions to the groundwater overdraft problem in Green Valley.

Sustainable Water Supply

The Green Valley area does not have a sustainable water supply given current groundwater pumping rates in the Upper Santa Cruz River Basin. The water table in Green Valley has been declining in past years, and is expected to decline even faster as water demands, through population growth and other factors, continue in the Green Valley area. In addition, large planned urban growth in the Santa Cruz Valley within Santa Cruz County will also cause water levels to decline faster than they have in the past, hence the need for increased awareness and planning associated with long-term water supplies for the water users in the Upper Santa Cruz Basin within Pima County.

Even though certain Green Valley water providers have very limited (5,000 acre-feet) contracts for CAP water, this water is not physically available since the delivery facilities do not exist.

Pima County Not a Water Provider, But a Provider of Reclaimed Water

Pima County is not a water provider. Therefore, the County has no financial interest or responsibility in securing long-term water sources or providing necessary infrastructure for the treatment and transmission of these water sources.

As the second largest wastewater reclamation entity in the state, we do have a secondary role in water supply, but only as it relates to the treatment of sewage and the conversion of same into reclaimed water. In 2006, the Green Valley Wastewater Treatment Facility treated approximately 2,000 acre-feet of effluent and produced 1,600 acre-feet of Class A+ reclaimed water. Under an effluent reuse agreement approved in 2001, Pima County delivers reclaimed water to Robson Ranch Quail Creek. This water is recharged by Quail Creek to replace groundwater pumped for turf irrigation. The remaining effluent, about 400 acre-feet, is discharged into percolation basins at the County's facility where it ultimately recharges the groundwater. Pima County should address the direct use of reclaimed water at Quail Creek, in lieu of recharge and recovery, in future negotiations for renewal of the effluent agreement in 2013. The County should also implement wastewater treatment modifications so that the entire plant is producing Class A+ reclaimed water that is suitable for turf irrigation.

Pima County's Regional Flood Control District has had a large role in constructing flood detention basins that have, in at least one case, operated as the state's largest urban stormwater harvesting facility (Kino Environmental Restoration Project). The District also has authority to construct and operate groundwater recharge facilities that also have flood control benefits.

Because Pima County is not a water provider, we can only facilitate, offer advice and encourage the various water users and water providers in the Upper Santa Cruz Valley Basin within Pima County to cooperate in their endeavor to secure a more permanent and stable water supply. Because we are a provider of renewable water derived from the treatment of sewage, we are directly interested in the beneficial use of this resource to reduce groundwater overdraft.

Rosemont Mine Pipeline Extension a Detractor to the Problem of Water Supply

Recently a great deal of controversy has arisen over the proposal of Rosemont Mine to pay for a Central Arizona Project pipeline extension from the Pima Mine Road recharge site to a recharge site in the general service area of Community Water of Green Valley. It is unfortunate that this proposal received so much publicity and caused so much controversy within the Green Valley community because it is simply irrelevant to the permanent solution of securing the long-term water future of the Upper Santa Cruz Valley Basin within Pima County.

A new mine, without question, should be prohibited from using groundwater, particularly when other, lower quality water sources are available. In fact, all mine water consumption, whether new or existing, should be from a lower water quality or non-potable water source. The proposal by Rosemont to pay for a 20-inch pipeline extension to convey Central Arizona Project water to a recharge facility within the Community Water service area does more harm than good, particularly when studies sponsored by the Arizona Department of Water Resources indicate that such a pipeline would only serve one small segment of the Upper Santa Cruz Valley water users. Past studies indicate that the size of a pipeline that would convey Central Arizona Project water for direct use or recharge for the entire Upper Basin would need to be at least 72 inches in diameter. Hence, discussion of only a partial solution, a 20-inch pipeline, is counterproductive, and spending money for such a limited solution would be a waste of resources.

Who Uses Green Valley Water

In the attached report, Evaluation of Sustainable Water Supply Options in Green Valley, Table A indicates that in 2006, nearly 76,000 acre-feet of water was consumed in the area, with the largest single use for metal mining, which consumed approximately 35,000 acre-feet, or 46 percent of the total, followed by agriculture at nearly 30,000 acre-feet, followed by municipal water providers at 6,700 acre-feet and golf course use at 4,500 acre-feet. Of this data, what is surprising is that metal mining is the largest consumer of groundwater in the area, and that metal mining and agriculture combined account for 85 percent of the groundwater used in 2006. Another surprising statistic is that golf course irrigation in the Green Valley area almost equals potable water provided to residential or commercial use in Green Valley. These use allocations do not change dramatically over time. Projected use in the year 2025 increases to approximately 95,000 acre-feet, with metal mining consuming 57 percent of this use at 54,000 acre-feet per year. Combined with agriculture, which drops significantly to 16,257 acre-feet, mines and agriculture account for 74 percent of the projected water use in 2025. During this time period, municipal water use more than doubles to 16,300 acre-feet of water per year and golf course use grows modestly to 6,000 acre-feet per year. Mines and agriculture continue to dominate the water use in the Upper Santa Cruz Basin, even 20 years from now.

The True Cost of Water

In the attached report, funding the preferred alternative for a CAP water pipeline extension to the Green Valley area costs approximately $120 million. This cost has been allocated in accordance with actual water use. While such an allocation is instructive from an equity perspective, it does not reflect the state of existing water law in Arizona, which obviously significantly subsidizes mining and agricultural uses when considered in a modern water cost perspective from the reality of scarcity. The long-term true cost of water is substantially higher than the actual cost paid by a user sector, particularly mining or agriculture. If the cost

of extending the Central Arizona Project pipeline could be equitably distributed among each user in proportion to the user's volume of use, the municipal sector could easily pay for the pipeline extension by charging existing residential customers a surcharge of between $5 and $8 per month over a five-year period. However, such assumes that metal mining and agriculture pay their full cost associated with water usage. Due to grandfathered water rights and other factors, such is unrealistic, and it is likely the municipal sector will bear the single largest cost of extending the CAP water supply to Green Valley. However, the discussion does underscore how much mining and agriculture are subsidized in the state from the perspective of equitably sharing in the cost of future water supplies.

Options Available

To create a sustainable water supply in the Upper Santa Cruz Basin, contained in the attached report are a number of financing options and arrangements, including authorities and districts, that are available to facilitate the capital expense associated with extending a Central Arizona Project water delivery pipeline to the central Green Valley area. In the future, the County will ask the Bureau of Reclamation and the United States Army Corps of Engineers to consider refined studies and to develop implementation and financing options for pipeline extension. In addition, an entity that should be primarily interested in facilitating such an extension would be the Central Arizona Groundwater Replenishment District since, as indicated in Figure 1 of the report, there are a number of residential subdivisions in the Green Valley area that are members of the Groundwater Replenishment District. At present their replenishment obligation and hence recharge does little, if any, to hydrologically benefit the area of groundwater withdrawal. If CAP infrastructure (delivery and recharge facilities) was available in the Green Valley area, the Groundwater Replenishment District could replenish the aquifer in Green Valley.

The County will continue to provide a forum for discussing these important regional issues, including continuing to promote a regional authority to deal with water supply and reclamation issues on a Countywide and active management area-wide basis.

Conclusion and Recommended County Actions

The Upper Santa Cruz River Basin, centered in the Green Valley area, is in groundwater overdraft. Water supplies will become critical within the next ten years. One key concern for Green Valley is the limited availability of CAP contracts. The total water use is projected to be 88,000 acre-feet in 2015 and, unfortunately, two municipal water providers have only 5,000 acre-feet in CAP allocations. For this area to be sustainable, a mix of all available water resources must be used efficiently and effectively. These include groundwater replenishment, use of effluent, additional CAP supplies, storm water and water conservation. It is essential that the area obtain physical access to renewable supplies and use said supplies to augment groundwater imbalance through recharge or to supplement groundwater use by direct use of Central Arizona Project water. Mines and agriculture consume most of the groundwater and hence cause most of the groundwater overdraft in the Upper Santa Cruz

Basin. They need to financially participate in and become a partner in the long-term solution to sustainable water supply in the Green Valley area. The County can do little except facilitate a long-term solution to this problem, and continue to think outside the box of traditional sources and solutions, including the recommendations outlined below.

Recommendation

It is recommended the Board of Supervisors authorize the following actions, after holding a public hearing and inviting affected water users in the Green Valley area to offer comment and review on this report and its recommendations. I would recommend the Board of Supervisors hold a public hearing on this matter approximately 30 days after release of this report. At this time the recommended actions of the Board would be as follows:

1. Facilitate and assist Green Valley municipal water providers, as well as existing mine and agricultural water users, to cooperate in the extension and financing of a Central Arizona Project pipeline to provide both direct use of Central Arizona Project renewable water supplies, as well as recharge of same;

2. Ask the Central Arizona Project Groundwater Replenishment District, who has numerous member subdivisions in the Green Valley area, the Bureau of Reclamation and the United States Army Corps of Engineers to assist in the planning and development of the Central Arizona Project pipeline delivery system extension for both direct use and recharge, while promoting multiple benefits, both environmental and recreational, associated with groundwater basin recharge resulting from Central Arizona Project water recharge;

3. Encourage existing groundwater users, both mines and agriculture, to make direct use of renewable Central Arizona Project water supplies in lieu of groundwater pumping;

4. Support new state and federal legislation and regulation requiring any expansion of existing or any new mining activities to use only renewable water supplies in their operation;

5. Authorize the Regional Flood Control District to provide necessary matching funds for any federal agency study to extend the Central Arizona Project transmission system to or through the Green Valley area, provided one use of Central Arizona Project water supply is for the purpose of floodplain recharge with resulting environmental riparian benefits.

CHH/jj

Attachments

c: John Bernal, Deputy County Administrator - Public Works
Suzanne Shields, Regional Flood Control District Director
Kathy Chavez, Water Policy Manager, Regional Flood Control District
Frank Postillion, Principal Hydrologist, Regional Flood Control District

Attachment A

Evaluation of Sustainable Water Supply Options in Green Valley[1]

October 1, 2007

I. Introduction

The Green Valley area does not have a sustainable water supply given current groundwater pumping rates in the Upper Santa Cruz River Basin. The magnitude of the groundwater overdraft problem is likely to grow worse in the future as water demand in the area increases. A collaborative effort among Green Valley's major water users could change this outlook. One approach to creating a sustainable water supply in Green Valley involves extending the Central Arizona Project (CAP) pipeline at the terminus of Pima Mine Road to the northern portion of Canoa Ranch to allow recharge of the Santa Cruz River at various points along the way and direct use of CAP water by the mines and agriculture as a substitute for groundwater pumping. This paper discusses a preferred route for a CAP water line extension, presents one possible approach to distributing costs of the new line among the various water users (based on an equity model where users pay based on their proportional share of current or projected water use) and identifies various financing mechanisms that could be employed to provide Green Valley with a sustainable and renewable water supply.

II. Background

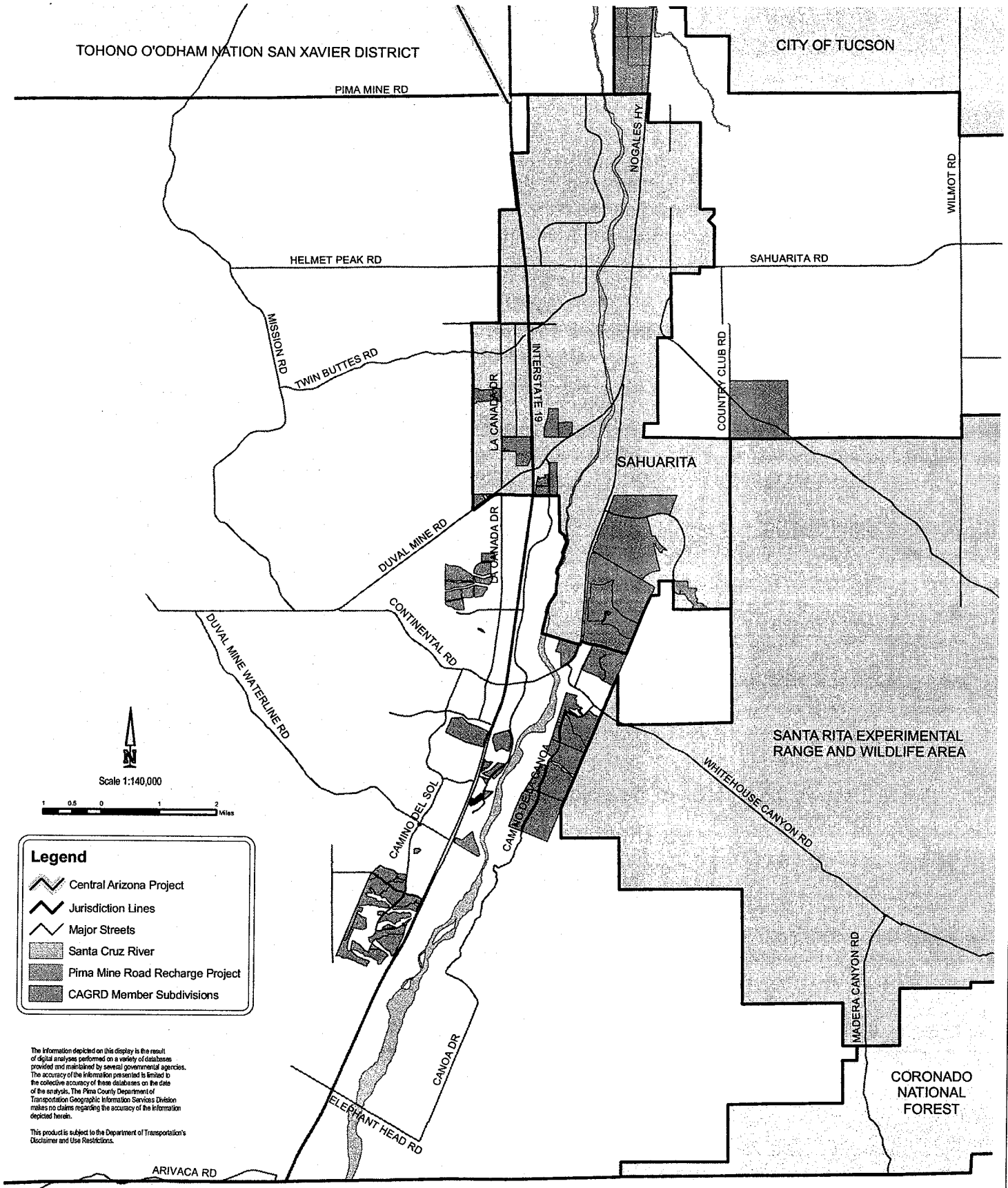
The Green Valley area lies within the upper Santa Cruz River Basin. The area is bisected in a north-south direction by the Santa Cruz River and the Interstate 19 Freeway corridor (see Figure 1). Major water users in this area have relied exclusively on the use of groundwater pumping to meet their water needs.[2]

The largest water users are the mines and agriculture, which consumed 85 percent of the groundwater used in 2006, according to Arizona Department of Water Resources (ADWR). Smaller users include municipal providers which together used 9 percent of the groundwater pumped in 2006 and golf courses which used 6 percent.

---

[1] Prepared by Kathleen M. Chavez, P.E., Water Policy Manager, Pima County Regional Flood Control District, Tedra E. Fox, Sustainability Manager, Pima County Administrator's Office and Frank Postillion, Chief Hydrologist, Pima County Regional Flood Control District

[2] *Sahuarita-Green Valley Area Central Arizona Project Water Use Feasibility Analysis and Delivery Optimization Study*, prepared by Malcolm Pirnie in association with Errol L. Montgomery & Associates, Inc., for the Arizona Department of Water Resources Tucson Active Management Area (1998), p. ES-1 (hereinafter referred to as the "Malcolm Pirnie" study).



DOT Geographic Information Services

Pima County Geographic Information Services
201 North Stone Avenue - 9th Floor
Tucson, Arizona 85701-1207
(520)740-6670 - FAX:(520)798-3429
http://www.dot.pima.gov

Green Valley Area - Location Map - Figure 1

\\gislib\specproj\kchavez\cmo0209\mxds\figure1.mxd MP

9/25/2007

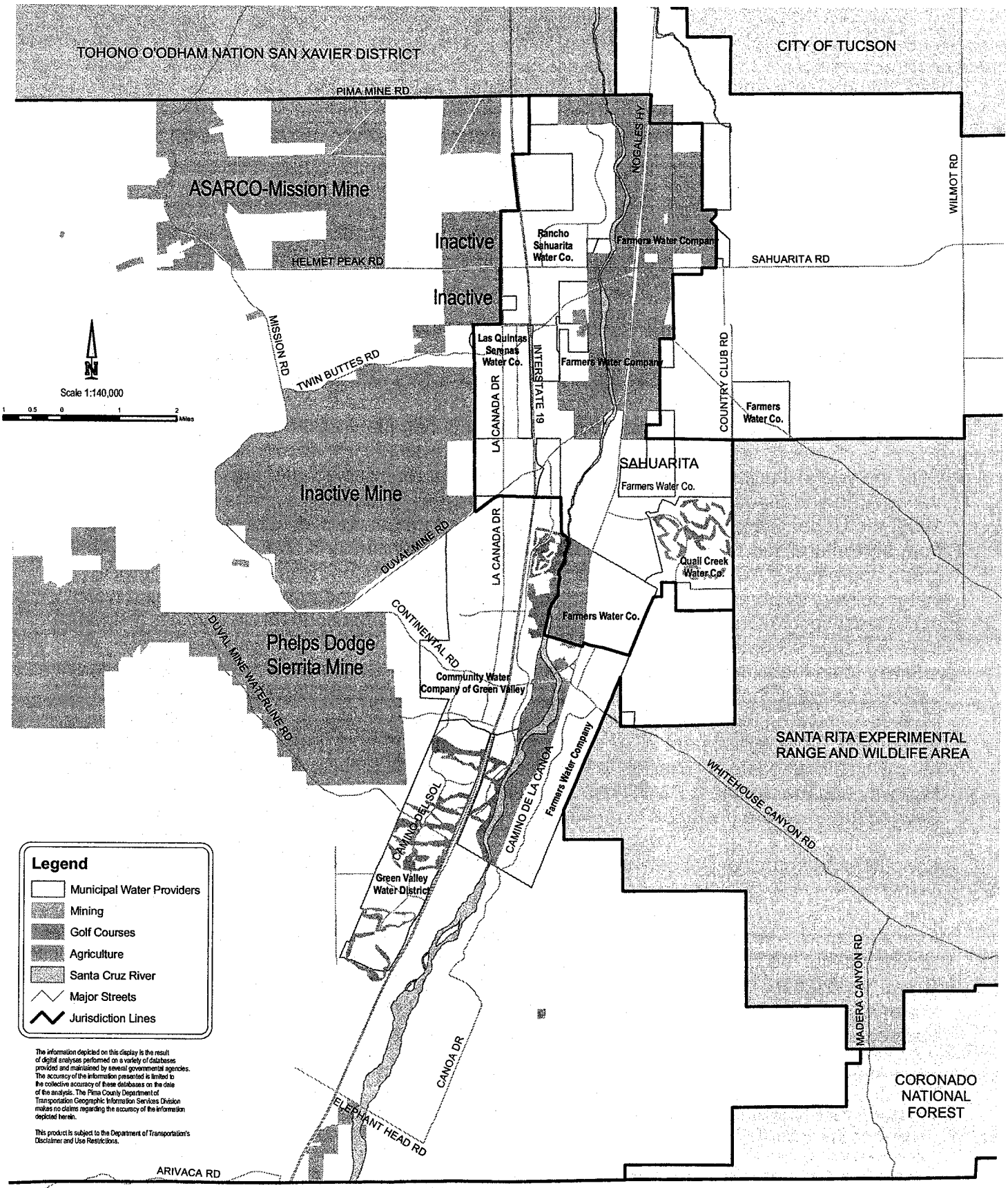
The Malcolm Pirnie study predicts substantial increases in water use in the Green Valley area over the next few decades. Table A shows the existing and projected water use of the major Green Valley water users based on the consumption rates reported to ADWR in 2006 and the water use projections developed in the Malcolm Pirnie study for the years 2015 and 2025.

TABLE A:
EXISTING AND PROJECTED WATER USE
(acre-feet per year)

Major Water Users	Actual Water Use 2006[2]	Projected Water Use[3] 2015	2025
Municipal Water Providers[4]	6,689	14,099	16,257
Metal Mining[5]	34,583	54,000	54,000
Agriculture	29,800	28,104	18,738
Golf Courses	4,435	5,599	5,599
Sand & Gravel	465	700	700
Total	75,972	102,502	95,294

Figure 2 shows the location of the major water users in the Green Valley area as well as jurisdictional boundaries.

[2] *The Malcolm Pirnie Study*, p. ES-1
[3] Projections are from Tables ES-10 and ES-11 in the Malcolm Pirnie study.
[4] Rancho Sahuarita, FICO, Quail Creek, Las Quintas, Community Water of Green Valley, Green Valley Domestic Water Improvement District
[5] Includes ASARCO and Phelps Dodge



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Pima County Geographic Information Services
201 North Stone Avenue - 9th Floor
Tucson, Arizona 85701-1207
(520)740-6670 - FAX:(520)798-3429
http://www.dot.pima.gov

Green Valley Area - Major Water Users - Figure 2

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9/25/2007

Very little groundwater recharge in the Upper Santa Cruz River watershed occurs and the rate of replenishment is not enough to compensate for the continuous amount of overdraft. Recharge that does occur is the result of effluent discharge, some natural recharge, incidental recharge (from irrigation and mining activities) and CAP water recharge by the Central Arizona Groundwater Replenishment District (CAGRD) at their Pima Mine Road recharge facility, north of Green Valley. Even the CAGRD replenishment that occurs at the Pima Mine Road recharge facility is not optimal because it is hydrologically down gradient of the areas of groundwater withdrawal, which lie upstream from Pima Mine Road (see Figure 1).

Groundwater levels in the Upper Santa Cruz River Watershed are now declining at an estimated average rate of two feet per year. If groundwater pumping continues at the present rate, it is highly likely that well owners and water purveyors will have to expend more resources to drill new or deeper wells and portions of the Canoa Ranch area's riparian ecosystem may be adversely impacted, particularly during times of drought.

Over the years, studies have examined ways to bring a renewable water supply to the Green Valley Area and Sierra Vista by extending the CAP pipeline terminus at Pima Mine Road.[6] In 1996, the Upper Santa Cruz Water Users Group was formed, consisting of representatives from agricultural, industrial and municipal uses; public agencies and other stakeholders. This group approached ADWR about conducting a feasibility study for the construction of a CAP water delivery system that would extend south of Pima Mina Road and deliver the most water at the least cost to Green Valley water users.[7] The resulting Malcolm Pirnie study examined three possible alignment corridors for a CAP pipeline extension. A preferred alignment, referred to as the "Nogales Highway/Old Nogales Highway–Canoa (N-3/S-3)" alignment, was selected based on both cost and non-cost criteria.[8] The preferred alignment is shown as Phases 1 and 2 on the Figure ES-3 ("Recommended Pipeline Alignment") of the Malcolm Pirnie report (see Attachment 2). The pipeline would extend from the CAP terminus at Pima Mina Road in an easterly direction to Nogales Highway and then south along the Old Nogales Highway and the Southern Pacific railroad alignment to the north end of Canoa Ranch. Several turn-outs are designed to provide Phelps Dodge and FICO's Sahuarita Farms and Continental Farms with direct use of CAP water for agricultural irrigation. Three additional turnouts would provide groundwater recharge into the Santa Cruz River.

The issue of a renewable and sustainable water supply for Green Valley is moving to the forefront again. A representative of the Groundwater Awareness League in Green Valley has requested that the County determine a method for resolving the groundwater deficit issue in Green Valley (see Attachment 1: letter from Nancy Freeman). In addition, the Community Water Company of Green Valley recently entered into a Letter of Intent with Augusta Resource Corporation (developers of the proposed Rosemont Mine) that would allow

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[6] The Bureau of Reclamation studied the possibility of extending the CAP water pipeline from Pima Mine Road to Sierra Vista in order to offset groundwater pumping and to provide for future water use in that community. However, the proposed alignment did not extend south of Sahuarita Road and thus, it could not effectively serve most of Green Valley's major water users. See *Augmentation Alternatives for the Sierra Vista Sub-watershed*, U.S. Department of the Interior, Bureau of Reclamation (June 2007).

[7] Malcolm Pirnie study, pages ES-1 and ES-2.

[8] Non-cost criteria included utility conflicts, right-of-way acquisition, traffic impacts, commercial and industrial impacts, residential impacts, institutional impacts, ecological impacts, archaeological impacts, environmental impacts and floodplain/floodway impacts. Malcolm Pirnie, ES-14.

Augusta to fund a seven-mile extension of the CAP pipeline from Pima Mine Road to Community Water Company's well near Duval Mine Road.

III. Finding a regional solution to Green Valley's overdraft problem

The Green Valley area is situated in the southern portion of the ADWR Tucson Active Management Area. ADWR views the use of CAP water as a key component in achieving long-term water balance in the Tucson AMA.[9]

In addition, the Central Arizona Groundwater Replenishment District (CAGRD), which has several member subdivisions in the Green Valley area, has an obligation to replenish the groundwater pumped for these subdivisions with renewable water. (CAGRD subdivisions are shown in Figure 1.) Currently, the CAGRD is meeting its replenishment obligation by recharging CAP water at the Pima Mine Road and Lower Santa Cruz River recharge facilities. Clearly, it is more desirable that the replenishment take place closer to the areas where groundwater withdrawals are occurring.

The CAP pipeline extension preferred alignment ("Old Nogales Highway–Canoa") identified in the Malcolm Pirnie study would help secure Green Valley's water future. The pipeline would import a renewable water supply in the Upper Santa Cruz River watershed for the area's major water users for at least the next 20 years. This pipeline extension could potentially deliver 88,5000 af per year of renewable water, which is sufficient to meet the projected water needs of all major water users except ASARCO, during the projected peak use year of 2015. Because ASARCO's Mission Complex mine is located near the CAP water line terminus, ASARCO could theoretically be able to meet their water needs by constructing a mini-pipeline for direct service of CAP water.

The construction of the Old Nogales Highway–Canoa CAP pipeline extension offers several advantages, in addition to those described above: it recharges water in the area where it is being withdrawn so that localized groundwater balance occurs; it provides a renewable water supply for direct use by the two largest water users (mines and agriculture); and it provides sufficient excess capacity to allow for recharge directly into the Santa Cruz River at three locations.

The Old Nogales Highway-Canoa pipeline extension scenario could be further enhanced if additional recharge areas were created using tributaries to the Santa Cruz River. Consequently, it is recommended that the feasibility of providing additional recharge locations along the Santa Cruz River be studied and that the environmental consequences of an expanded recharge area also be evaluated. It is also recommended that the Malcolm Pirnie study be updated, as necessary, to reflect any changed conditions.

The Malcolm Pirnie study presents four separate water delivery and cost scenarios for the Old Nogales Highway-Canoa preferred alignment. The first three scenarios are shown in Table B below.

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[9] *Regional Recharge Plan*, Arizona Department of Water Resources, Tucson Active Management Area (August 1998), page ES-1.

Scenario 1 would deliver water to Sahuarita Road and the FICO Sahuarita Farm only, with volumes from 13,000 to 24,000 acre-feet per year, depending on the year delivered.

Scenario 2 would deliver water farther south but have only one recharge turnout location and a total delivery of 59,000 to 65,950 acre-feet per year.

Scenario 3 would deliver the highest projected water supply to the major water users at a total estimated cost of $120 million (in 2008 dollars), or $167 per acre-feet of water delivered.

TABLE B
PREFERRED OLD NOGALES HIGHWAY – CANOA ALIGNMENT (N-3/S-3)

Malcolm Pirnie Preferred Alignment Scenario[1]	1998 Capital Cost Estimate[2]	Projected Cost in 2008 Dollars Based on 3% Annual Inflation	Estimated Water Delivery in 2015[3] (acre-feet)	Estimated Unit Conveyance System Costs in 1998[4] ($/AF)	Estimated Unit Conveyance System Costs ($/AF) in 2008 Dollars Based on 3% Annual Inflation
Scenario 1	$23.0 M	$30.9 M	19,700	$59	$79
Scenario 2	$72.1 M	$96.9 M	65,950	$139	$187
Scenario 3	$88.9 M	$119.5 M	88,500	$124	$167

[1] Scenario 4 is excluded from the table because it includes a regional treatment facility at Elephant Head Road for municipal use and does not provide the same level of groundwater recharge as Scenario 3.
[2] Based on estimates from Malcolm Pirnie study, Table ES-12
[3] Based on projected water demand estimates from Malcolm Pirnie study, Table ES-11
[4] Based on capital, O&M and replacement costs over a 30-year pay off at 3% interest. 2015 is the highest water use year projected by the Malcolm Pirnie study, Table ES-13.

Scenario 4, which would extend the pipeline to Elephant Head Road and include the construction of a treatment facility, is not included in Table B because it is not considered as optimal as Scenario 3 for the following reasons: (1) it does not deliver any more water than Scenario 3; (2) it costs $18 million more (in 1998 dollars) because it involves five more miles of pipe and the construction of a treatment facility; and (3) any groundwater recharge that occurs south of the Scenario 3 pipeline extension (near the north end of Canoa Ranch) would not be as beneficial because the water table in that area is already fairly high (ground water levels are 30-90 feet below surface there compared to 200-400 feet below surface in the central portion of the study area); and (4) direct use of CAP by Phelps Dodge would significantly reduce groundwater pumping at their Canoa Ranch Well Field, thereby allowing groundwater levels to recover.

To implement Scenario 3, substantial additional CAP water allocations would have to be secured because current and pending allocations in the Green Valley area only total about 5,000 acre feet.[10] However, options do exist for securing additional CAP water, including allocations held by the State Land Department, using non-Indian agriculture priority water allocations, or entering into agreements with Indian Nations who are not currently using their

[10] *Water Resource Availability for the Tucson Metropolitan Area*, Sharon B. Megdal, Water Resources Research Center, July 2006.

CAP allocations.[11] Additionally, the CAGRD has replenishment obligations for its member subdivisions. The CAGRD is responsible for acquiring renewable water (currently CAP) for its member subdivisions.

IV. Funding the CAP water line

Tables C and D are examples of how an equitable cost-sharing formula might be applied to fund the Scenario 3 version of the Old Nogales Highway-Canoa CAP water line extension. Costs are distributed among all current groundwater users in Green Valley based on their proportional share of groundwater use. Under the equitable cost-sharing model, a water user that pumps one acre foot of groundwater must pay to recharge one acre foot of groundwater or, alternatively, use one acre foot of CAP water as a substitute for groundwater. Two model scenarios were created to show the minimum and maximum costs each user might expect to pay under the lowest volume and highest volume water delivery scenarios (the cost per acre foot decreases as water delivery volumes increase).

Table C shows how much each water user would pay based on their actual 2006 water use, which is the lowest volume of water use expected to occur over the next 20 years. Under this scenario, agriculture would pay the highest amount of capital costs (about $53 million) and Phelps Dodge would pay the next highest amount (about $47 million). Municipal water providers would collectively pay about $12 million. When municipal costs are spread out among an estimated 27,600 residential customers, each household would pay a one-time cost of $434 or $36.17 per month *for one year.*

TABLE C:
COST DISTRIBUTION BASED ON EQUITY MODEL
FOR LOWEST WATER DELIVERY

Green Valley Area Ground-Water Users	Lowest Projected Water Use in AF (see Table A)	Percentage of Total Groundwater Use in 2006	Projected Phase 3 Capital Costs in 2008 (see Table B)	User's Equitable Share of Capital Costs For Phase 3 Alignment
Municipal Water Providers	6,689	10%	$120 M	$12.0 M[2]
Metal Mining[1]	26,690	39%	$120 M	$46.8 M
Agriculture	29,800	44%	$120 M	$52.8 M
Golf Courses	4,435	7%	$120 M	$8.4 M
Total	68,079	100%	$120 M	$120.0 M

[1] Includes Phelps Dodge only. ASARCO is excluded from the calculation because they have access to CAP at the terminus and could construct a mini-pipeline for direct service.
[2] The cost is $36.17 per month per customer for one year, based 27,600 residential customers at 1.8 people per unit and 120 gallons per capita a day.

[11] See http://www.cap-az.com/static/index.cfm?contentID=22

Table D shows how much each water user would pay under the highest water delivery scenario, which is projected to occur in 2015 in the Malcolm Pirnie study. Under this scenario, Phelps Dodge would pay the highest amount of capital costs (about $55 million) and agriculture would pay the next highest amount (about $38 million). Municipal water providers would collectively pay about $19.2 million. When municipal costs are spread out among a 2015 estimated 67,200 residential customers, each household would pay a one-time cost of $286 or $23.81 per month *for one year*. Note that in the year 2015 scenario, agriculture is no longer the largest groundwater user. That is because over time, agricultural land is expected to be converted to residential and commercial developments and other municipal uses.

TABLE D:
COST DISTRIBUTION BASED ON EQUITY MODEL
FOR HIGHEST WATER DELIVERY

Green Valley Area Ground-water Users	Highest Projected Water Use in AF (see Table A)	Percentage of Total Groundwater Use in 2015	Projected Phase 3 Capital Costs in 2008 (see Table B)	User's Equitable Share of Capital Costs for Phase 3 Alignment
Municipal Water Providers	14,099	16%	$120 M	$19.2 M[2]
Metal Mining[1]	40,000	46%	$120 M	$55.2 M
Agriculture	28,104	32%	$120 M	$38.4 M
Golf Courses	5,599	6%	$120 M	$7.2 M
Total	88,502	100%	$120 M	$120.0 M

[1] Includes Phelps Dodge only. ASARCO is excluded from the calculation because they have access to CAP at the terminus and could construct a mini-pipeline for direct service.
[2] The cost is $23.81 per month per customer for one year, based on 67,200 residential customers at 1.8 people per unit and 120 gallons per capita a day.

The equity model shown in Tables C and D does not recognize the state of existing water law or grandfathered rights to groundwater use. However, it is instructive in identifying the costs that water users would incur if their share of groundwater over drafting was the only factor considered in developing a financing mechanism. Hopefully, this information can serve as a baseline for initiating a community dialogue about each water user's appropriate, fair-share contribution to finding a regional solution to Green Valley's overdraft problem.

V. Additional Financing Options & Arrangements

Under state law, a variety of development authorities and special districts can be used to help fund the cost of a CAP water line extension to Green Valley. Two separate authorities, the Water Infrastructure Authority (WIFA) and the Greater Arizona Development Authority

(GADA), provide financial assistance to public agencies and special districts to construct water infrastructure projects. In addition, various water districts could potentially be formed to build, operate and maintain a CAP water line extension for Green Valley water users. The water districts would assess fees and charges to the water users within the district to pay for the CAP water system. A summary of statutory financing options and water district arrangements is described below.

Water Infrastructure Authority (WIFA)
Established under ARS 49, Chapter 8, the Water Infrastructure Authority is an independent State agency that can finance construction, rehabilitation and/or improvement of drinking water, wastewater, wastewater reclamation and other water quality facilities. WIFA offers a borrower below market interest on loans for one hundred percent of eligible project costs. WIFA operates as a revolving loan program. Funds are capitalized by contributions from the state and U.S. Congress. The Drinking Water Revolving Fund is available for eligible publicly and privately-held drinking water systems. Publicly-held community drinking water systems includes cities, towns, special districts, domestic water improvement districts, co-ops and nonprofit associations. The borrower must demonstrate legal, financial, technical, managerial and institutional capability and must obtain the legal approval of its constituents to undertake a loan agreement with WIFA.

Greater Arizona Development Authority (GADA)
GADA was created by the State Legislature under ARS 41, Chapter 10, Article 8, to assist local and tribal governments and special districts with development of public infrastructure. GADA leverages its funds to lower the costs of financing and help accelerate project development for public facilities owned, operated and maintained by political subdivisions, special district or tribal governments. GADA offers low interest loans and grants to help accelerate projects. GADA also provides competitive grants for project development such as engineering planning, design review and feasibility studies.

Domestic Water Improvement Districts (DWID)
ARS 48, Chapter 6, enables formation of a domestic water improvement district to provide water services. A DWID can assess user fees for the operation, maintenance and replacement of the water system and can impose connection fees. The district may issue revenue bonds or enter into loan agreements or accept financial assistance to construct, acquire or improve drinking water facilities. The district may file a property lien for nonpayment of user fees. The district is formed when a petition, signed by a majority of the persons owning real property or by the owners of fifty-one percent or more of the real property is filed with the clerk of the county board of supervisors and the board of supervisors holds a hearing and approves the formation of the district.

Irrigation and Water Conservation Districts
Under ARS 48, Chapter 19, Irrigation and Water Conservation Districts can construct, acquire or improve a drinking water facility. It can establish tolls or charges for service of irrigation, domestic water electricity and other commodities. A district is formed when a petition signed by a majority of the resident owners and filed with the board of supervisors of the county in which the greater portion of the proposed district is located and a majority of the votes cast are "yes" votes. The district can issue general obligation bonds or revenue bonds or enter into a loan agreement with WIFA and can levy taxes or fees to meet its debt obligations.

Community Facility District

ARS 48, Chapter 4, Article 6, defines Community Facility Districts which may enter into contracts and expend monies for any public infrastructure purpose with respect to the district. It may enter into agreements with landowners and the municipality or county for collection of fees and charges from landowners for public infrastructure purposes and can enter into contracts and agreements to obtain credit enhancement or liquidity support for its bonds. Each owner has the number of votes or portions of votes equal to the number of acres or portions of acres rounded upward to the nearest one-fifth of an acre. Formation of the district must be approved by a majority of the votes cast at an election. The governing body appoints the initial directors. The District is a tax levying public improvement district.

Multi Jurisdictional Water Facilities Districts

ARS 48, Chapter 34, defines Multi Jurisdictional Water Facilities Districts that may enter into contracts and expend money for any water related facility consistent with the district's general plan. It may construct, operate, maintain and repair water related facilities, except for facilities that are customarily used to serve individual customers of municipal water providers. The District can establish and charge and collect user fees, rates or charges for the use of water related facilities or services. It may enter into grants and loans with any federal, state or local entity. The district may not engage in retail sale of water, exercise the power of eminent domain nor use district monies to acquire water rights. The requirements for forming a water facilities district are 1) the governing body of each municipal water provider approves holding an election on the issue of formation of the district, 2) if a municipal water provider is a private water company, the governing body of each city, town or county in which any participating portion of the service area of the private water company is located approves holding an election on the issue of formation of the district, 3) an election is held, and 4) a majority of those persons voting approves the formation of the district.

VI. Conclusion

Pima County supports the development of a sustainable and renewable water supply in the Green Valley area in order to ensure an adequate and safe water supply for residents and as part of its commitment to preserve the County's significant riparian habitats. With the collaboration and cooperation of all major water users in the Green Valley area, a renewable water supply for Green Valley can be realized and the replenishment of the Upper Santa Cruz River Basin can begin.

Attachment 1-Letter from Nancy Freeman, Groundwater Awareness League

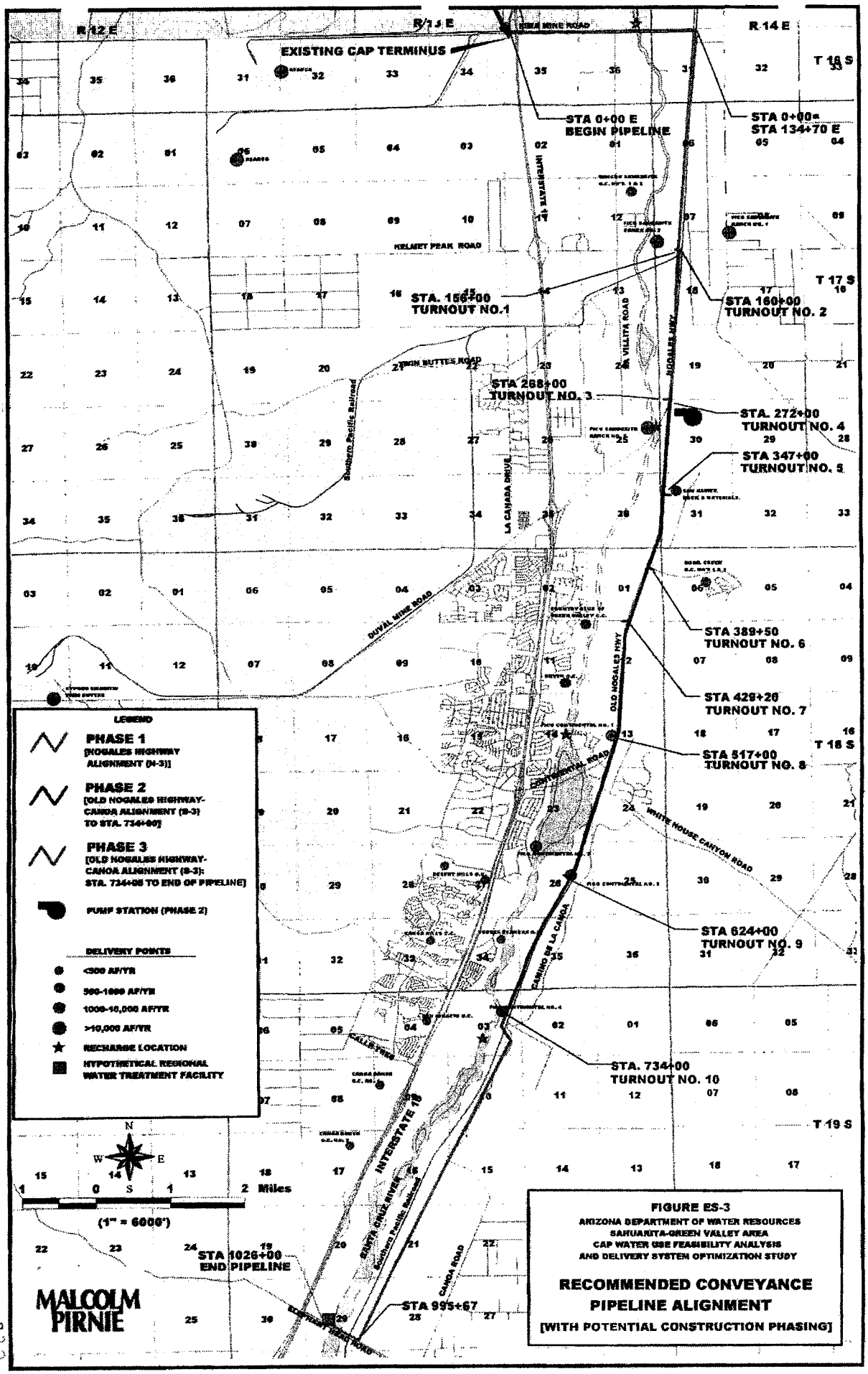
Nancy Freeman
Groundwater Awareness League, 188 Calle del Ano, Green Valley, AZ 520/207-6506

The message from the County has been you people in Green Valley are responsible for your water problems—you deal with it. I beg to differ. The fact is Green Valley residents were not informed that with the 1980 Groundwater Code that 50,000 a.f. of groundwater were grandfathered—this is against a natural recharge of some 25,000 a.f. which means that water mining was going on since Sierrita/Duval mine started pumping for operations in 1970. The County has continued to permit development, in spite of the fact that no one has ever done a study to determine the subsidence risk. Since I gave the Board a presentation in March, 2006, I have been asking for such a hearing on the issue. When nothing had been done this March, I started another campaign and was joined by many Green Valley residents, to ask that the County do a study or request the Bureau of Reclamation to do a study. Then the final word came from Chuck Huckleberry—the County was not going to give us a hearing or to do anything about studying the subsidence factor or determining some methods of relief from the continued 31,000 a.f. of groundwater deficit. The deficit in Sierra Vista is only 4,000 a.f. and we know the assistance they are getting at every level of government.

The current misrepresentation of the CAP pipeline is simply a neglect of looking at the facts and figures and facing in the reality. Because of the law suit in the early 1970's by FICO against water depletion by the mines, in 1983, PAG completed a study done by PAG and Army Corp of Engineers. They published an excellent report—with comprehensive data on mining waste pollution and water depletion. In the report, recommendations were specifically listed, including water balance study for all mines. That was in 1983, in 2002, when the follow-up report came out, none of these recommendations were even mentioned. As a matter of fact, The Sierrita/Duval mine numbers were left out—they were not easy to obtain—and the total dissolved solids and hardness levels of Community Water Wells were also "mysteriously omitted [page C-4 & C-5]. It was clear that the Feds and county had paid for another expensive report that was put on the shelf and ignored.

At this time, there is a potential additional water user that is exempt from needing to have water rights by state law (showing us how invalid a 100-year certificate is). They propose to pump 5,000 to 7,000 a.f. [I believe it will be more] of groundwater near Sahuarita Road and I-19. Although it is not mandated that they do so, they are recharging that amount of water in Marana now, and hopefully in the future near where they are pumping groundwater. There is a logical reason for this: FICO grandfathered rights. If you have forgotten about their 1970's law suits, a copy of the final disposition of the case is on the Groundwater Awareness League website. Statements such as "we don't want that pipeline to Green Valley" are downright misleading and uninformed. Did you talk to the CAP Board, did you talk to ADWR, or did you talk to the Bureau of Reclamation to get the easily available facts? Did you talk to the Forest Department to find out if having a recharge facility to replace the groundwater pumping would effect their decision on the permitting of the mine? I am sorry that some of the board members have preferred to divert the public's attention from the real issue of focusing on the stopping the mine. False accusations causing divisions among us are not going to do it. Let's get on task.

Attachment 2-Figure ES-3: Recommended Pipeline Alignment


R 12 E
R 13 E
R 14 E
T 16 S
T 17 S
T 18 S
T 19 S
EXISTING CAP TERMINUS
STA 0+00 E
BEGIN PIPELINE
STA 0+00=
STA 134+70 E
HELMET PEAK ROAD
STA. 156+00
TURNOUT NO. 1
STA 160+00
TURNOUT NO. 2
TWIN BUTTES ROAD
STA 268+00
TURNOUT NO. 3
STA. 272+00
TURNOUT NO. 4
STA 347+00
TURNOUT NO. 5
STA 389+50
TURNOUT NO. 6
STA 429+20
TURNOUT NO. 7
STA 517+00
TURNOUT NO. 8
STA 624+00
TURNOUT NO. 9
STA. 734+00
TURNOUT NO. 10
STA 1026+00
END PIPELINE
STA 995+67
INTERSTATE 19
VILLITA ROAD
NOGALES HWY
LA CANADA DRIVE
DUVAL MINE ROAD
OLD NOGALES HWY
CONTINENTAL ROAD
WHITE HOUSE CANYON ROAD
CAMINO DE LA CANOA
SANTA CRUZ RIVER
Southern Pacific Railroad
CANOA ROAD
LEGEND
PHASE 1
[NOGALES HIGHWAY ALIGNMENT (N-3)]
PHASE 2
[OLD NOGALES HIGHWAY-CANOA ALIGNMENT (B-3) TO STA. 734+00]
PHASE 3
[OLD NOGALES HIGHWAY-CANOA ALIGNMENT (B-3): STA. 734+00 TO END OF PIPELINE]
PUMP STATION (PHASE 2)
DELIVERY POINTS
<500 AF/YR
500-1000 AF/YR
1000-10,000 AF/YR
>10,000 AF/YR
RECHARGE LOCATION
HYPOTHETICAL REGIONAL WATER TREATMENT FACILITY
N
W
E
S
1 0 1 2 Miles
(1" = 6000')
MALCOLM PIRNIE
FIGURE ES-3
ARIZONA DEPARTMENT OF WATER RESOURCES
SANTA CRUZ-GREEN VALLEY AREA
CAP WATER USE FEASIBILITY ANALYSIS
AND DELIVERY SYSTEM OPTIMIZATION STUDY
RECOMMENDED CONVEYANCE PIPELINE ALIGNMENT
[WITH POTENTIAL CONSTRUCTION PHASING]

Attachment B

Water Supply Issues for the Southern Tucson Basin[1]
(Sahuarita-Green Valley-Canoa)
Pima County Regional Flood Control District

August 24, 2007

Problem Statement

- In the Green Valley area more groundwater is withdrawn than replenished. Major water users are agriculture, mining and municipal.[2]
- There is currently no sustainable water supply for the population and the environment. This is complicated by water and air quality problems from past mining activities. Green Valley needs to remain a livable, sustainable community.
- Local water providers' CAP allotment of 5,000 acre-feet is not sufficient to eliminate groundwater depletion

Desired Outcomes:

- Share water resources among municipal, agriculture, mining and environmental interests
- Balance the groundwater aquifer with the addition of new renewable water supplies
- Agricultural and mining land uses will eventually transition to residential development. The area should plan for changes in land uses and the related water demand changes
- Achieve community consensus based on a common set of facts.

Potential Solutions:
In general there should be minimal new development located in Conservation Lands System. Planning for post-mining redevelopment of Sierrita mine complex and Park Development Corporation lands should be considered. Other potential solutions are:

1. Groundwater Replenishment
   - Over the next 20 years progressively eliminate mining demand on groundwater beginning with PD wells in upper Canoa Ranch area
   - Install interceptor wells and increase the pumping volume at Sierrita wells. Balance groundwater recoveries of sulfate plume at existing ASARCO wells, and install interceptor wells at base of tailings at ASARCO ponds, and recycle.
   - Implement proposed water resources regional plan policies, so the Planning & Zoning Commission and the Board of Supervisors have water resources information on Comprehensive Plan amendments and rezoning requests that will result in increased groundwater pumping before increased land use intensity decisions are made.
   - Include zoning conditions in new development requiring water conservation, rainwater harvesting and graywater systems.

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[1] Prepared by Kathleen Chavez, P.E., Water Policy Manager, Pima County Regional Flood Control District
[2] Nancy Freemen, Green Valley Awareness League-6/19/07.

2. Effluent
   - Build a wastewater scalping plant and recharge effluent at Canoa Ranch
   - Terminate any City of Tucson claims on Green Valley and Arivica Junction effluent
   - Research the effluent IGA with Quail Creek to determine the amount of effluent that can be delivered to local golf courses to replace groundwater pumping
   - Locate turf facilities in close proximity to wastewater treatment facilities to minimize infrastructure costs
   - Require Quail Creek to convert effluent recharge ponds to a multi-purpose recharge facility with vegetation on side slopes and access to public as a condition of effluent IGA renewal
   - Commit excess effluent produced at the Green Valley WWTF to future uses by County.
   - Build a small reclaimed delivery system for excess Green Valley effluent to facilitate direct use. As a reclamation delivery system from the Green Valley WWTF is built, golf courses would convert to reclaimed water.
   - Convert GVWWTF percolation ponds to multi-purpose recharge facility with access to public.
   - Consistent with the Golf Course Zone Ordinance, no new golf courses permitted unless they directly irrigate with reclaimed water

3. CAP
   - Expand the CAP recharge capacity of Pima Mine Road by buying or condemning ASARCO gravel pit
   - CAGRD pays for new recharge capacity and buys and recharges CAP at the new gravel pit and helps finance a CAP delivery system to the mines.
   - Direct CAP use by mines with groundwater savings mechanism
   - Green Valley municipal water providers would acquire a portion of CAP water from the San Xavier District and recharge and recover it imposing water fees to finance a portion of the cost.
   - Pecan groves in the floodplain would be irrigated with CAP, not groundwater. Any remaining pecan groves outside floodplain would be converted to urban development with density no greater than 4 RAC, unless there is a renewable and potable water supply
   - Develop replenishment projects upstream near Canoa—(Very costly to do this with CAP, but adds water resources at the upstream end of the TAMA basin)
   - Abandoned ASARCO tailings would be rehabilitated for dust and erosion control using native plants, initially irrigated with high sulfate groundwater. A portion of the area would be redeveloped for intensive municipal/commercial use initially using groundwater, but transitioning to CAP with time. This area might include a CAP water treatment plant to produce potable quality water.
   - Infrastructure built from the existing CAP would supply redeveloped areas with potable water, along with Sahuarita, a portion of TW service area and northern Green Valley.

4. Stormwater
   - Build check dams to increase storm run off recharge and cease scouring washes. This may not be feasible unless there is a pristine watershed that could be directed into a recharge a pit in the mines without increasing the contamination problems.
   - Minimal floodplain encroachments on Santa Cruz River to allow for stormwater from tributaries to continue to infiltrate.

Bureau of Reclamation Participation[3]

- Funding for general planning studies is obtained in one of two ways; internal request or external request.
- An external request is done through a congressional authorization under Title XVI, in which a member of the Arizona delegation would request general planning studies monies be included, much as was recently done recently for H.R.1503 the Avra/Black Wash Reclamation and Riparian Restoration Project. Any constituent, water provider, local governmental entity can make the request. Funding is currently for the FY09 budget cycle.
- An internal request is done through BOR staff which consists of funding for a general planning study in the agency budget. This type of request would be accompanied by support letters, so the BOR can show there is local support. The BOR is working on the FY10 budget cycle.
- The general planning study could define the problem, collect data, screen alternatives and recommend solutions. Funding to implement the recommended project would require additional Congressional authorization and appropriation. Funding includes a federal share and a local share.
- The Bureau may have limited funding for the Water Resources Research Center to assist.

ADWR Study

In 1998 an ADWR study[4] investigated alternatives to deliver CAP water to major water users in the Sahuarita-Green Valley area. Findings included:

- Four scenarios range in cost from $23 to $116 million to deliver from between 13,000 and 81,000 acre-feet per year of CAP water to the area.
- Implementation will require a long-term commitment by water users, CAP water allocation holder and other sponsors to be successful
- Most of the major water users exhibit seasonal demand variations and the conveyance system must have sufficient peaking capacity to serve season demands.
- The four scenarios provide a versatile range of conveyance parameters. As delivery quantities and locations are better defined, the preliminary design can be refined to match the anticipated CAP deliveries
- Artificial recharge could reduce conveyance system costs and system-wide delivery costs.
- Approval to tie in to the CAP Reach 6 Pipeline should be pursued.
- Conditions affecting the use of CAP water should be updated periodically.

---

[3] Personal telecon with Eric Holler, Bureau of Reclamation-6/20/07.

[4] *ADWR Sahuarita-Green Valley Area Central Arizona Project Water Use Feasibility Analysis and Delivery System Optimization Study*, Malcolm Pirnie, Inc. September 1998

Recommendations:

- Form a stakeholders group to evaluate options, identify study needs and recommend actions. The group should consist of water providers (including Community Water of Green Valley), the mines, Farmers' Investment Corp., the development industry and citizens.
- The charge to form the group should come from the Board of Supervisors; staff could recommend strategies to improve water sustainability and mitigate water problems. Additional information needs should be identified. Financing opportunities for infrastructure also should be identified
- Since the ADWR study was conducted many factors have changed; the study did not consider land use, water quality, other water supplies or financing options.
- A well defined scope is needed. It would include a broad survey of water supply, water use, and water quality and how land use relates to these.

Carolyn Classen
<pololu@hotmail .com>
03/28/2008 06:51 AM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont Copper Project EIS

http://www.tucsoncitizen.com/daily/local/80975.php

Pleas read 3/28/08 article in Tucson Citizen newspaper about Rosemont Copper recent actions:

Stunt pulled by mining firm just shameless

Tucson Citizen
news@tucsoncitizen.com

The woman from Rosemont Copper who appeared at the door of the South Side apartment shared by Olivia Aguilar and Willie Hill about two weeks ago must have seemed like the answer to a prayer.
She wasn't there to sell them anything, she promised. She wanted to talk to the two, both of whom happen to be recently unemployed, about high-paying jobs for Tucsonans. All they had to do was be treated to dinner by Rosemont and attend a meeting. If they didn't have a ride, the company would provide one.
Aguilar, 25, and Hill, 31, were excited but completely unaware that they were about to be part of a shameless stunt by Rosemont to pack a March 18 public hearing in Tucson with shuttled-in, sham supporters of its plans to mine the Santa Rita Mountains.
Before the hearing held by the U.S. Forest Service as part of an environmental impact statement on the proposed copper mine, Rosemont representatives went knocking on doors at various locations, including the sprawling apartment complex on South Campbell Avenue near the airport.
The "community outreach team," as Rosemont calls it, was rounding up "supporters" to appear on the company's behalf.
The pitch was less than straightforward. Aguilar and Hill, who are raising four children and paid this month's rent with tax refund money, said they thought they were being recruited for mine jobs. They didn't know there are no jobs now and won't be for at least two years.
"They frigging lied so they could get our damn signatures on that list," Aguilar said.
Supervisor Ray Carroll, the most vocal opponent of Rosemont, is disgusted. Rosemont took advantage of people who are struggling to make it in a tough economy and thought it would get away "with treating them like they are so dumb that they wouldn't figure it out," he said this week.
Aguilar and Hill drove themselves to the dinner at Bennigan's, which Hill estimated was attended by 50 to 75 people. The couple also recruited Hill's sister, another job-seeker, to attend.
Aguilar noticed that nobody was taking applications. The only reference to jobs was a suggestion to leave a résumé with a company representative before heading in their own vehicles or in one of the shuttles provided by organizers to the public meeting at Pima Community College's Desert Vista campus.
Hill walked into the meeting at Desert Vista with a full belly, a hopeful attitude and a company-provided button reading "ROSEMONT COPPER, Great Jobs, Great Benefits" pinned to his shirt. He was immediately greeted with a disparaging remark by a mine opponent that made him realize he had walked into a political fight that he knew nothing about and in which he had no interest.
Though Hill laughed as he told the story, his disappointment was clear.
"I just wanted a job, a good job, to take care of my family," he said.
Juan Rascón, a mine opponent who attended the hearing, said he noticed the people coming off the buses. They were mostly young, including couples who brought their children with them, and predominantly Hispanic, he said. He estimated there were at least 100 people.
"It was quite an impressive show of force," Rascón said.
Rascón said organizers appeared to be moving them in and out of the meeting in an orderly manner -

having them sign the green public comment sheets indicating their support for Rosemont and return to the waiting buses.

He said at least one person wearing a Rosemont button had the impression that signing the green sheets was required to get on a job list.

Rascón said Rosemont's tactics reminded him of Mexican political parties combing the countryside and offering hats and blankets to poor farmers to show up at political rallies.

The mine "supporters" he spoke to knew little about Rosemont, but clearly "were there with the dream of getting one of these jobs."

The ones that don't exist.

Rascón, who said he had been a silent opponent of the mine, was so angry he approached Jamie Sturgess, Rosemont's vice president of sustainable development, to give him a message.

"As of tonight, you've lit me up, you've transformed me," he said.

He wasn't alone. Aguilar and Hill stayed to learn more and didn't like what they heard about the proposed mine's possible impact on water supplies and the environment. "As soon as we found out what was going on, we were taking off our buttons," Aguilar said.

On March 19, Sturgess apologized for the confusion in a written statement but defended Rosemont's "community outreach" efforts.

Jan Howard, a spokeswoman with Strongpoint, Rosemont's public relations group, said in a phone interview Wednesday that dinner was offered because the meeting was at the dinner hour and asked what was wrong with providing rides to people. She said Rosemont brought in no more than a couple of dozen supporters. And, she said, Rosemont's intent was to inform people of the potential benefits of the mine, not to mislead people about jobs.

"Sometimes people hear what they want to hear," she said.

Really? Aguilar gave me two informational sheets left with her by the Rosemont rep. One, to be fair, described the environmental impact statement process.

The other - the attention grabber - looked like what you pick up at a job fair. The "Rosemont Copper Career Opportunities" sheet talked about its plans to employ 500 people. The paper detailed the types and numbers of jobs that will be available. It promised a generous benefits package and noted that experienced workers in Arizona's copper industry earn an average of $59,000 a year.

Rosemont, along with its parent company, Canadian-based Augusta Resource Corp., has made lots of promises to southern Arizona, all of which boil down to a pledge to be a good corporate citizen.

To put it bluntly, this cheap attempt to corrupt the public hearing process reflects poorly on the ethics and corporate character of Rosemont. And it earned it at least two new opponents.

Before Aguilar and Hill left the March 18 hearing, they made a point of signing a petition against the mine.

Anne T. Denogean can be reached at adenogean@tucsoncitizen.com and at 573-4582. Her columns run Tuesdays and Fridays.

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"Darrick Benson "
<darrickb@cox .net>
03/27/2008 08:14 PM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont Copper Mine

To: U.S. Forest Service

I am writing this email as I will not be able to attend the April 5th 2008 public meeting in Vail to discuss the Rosemont Copper Mine.

I, Darrick W Benson am in strong opposition of the Rosemont Copper Mine for the following reasons:

1. The area being considered for mining is prime wildlife habitat for many animals – an open pit mine would forever destroy this habitat to include the great recreational attributes it has today
2. Open pit mining will forever destroy the scenic views along highway 83
3. Historically, open pit mining causes both air and water (surface and sub-surface) pollution

Furthermore, being the father of two young children, it is my responsibility to do all that I can to stop further destruction to our natural lands. In no way do the minuscule benefits of this open pit mine, outweigh the negative impacts that will last for generations to come.

I urge the U.S. Forest Service to reject any Mining Plan of Operations submitted by Augusta Resource Corporation for mining in the Santa Ritas based on the issues described above. In addition, I urge the U.S. Forest Service to withdraw these lands from Mineral Entry to ensure their permanent protection from mining.

Sincerely,

Darrick W Benson
9649 S. San Esteban Dr.
Vail, AZ 85641

"Linda Sivley" <lindasivley@msn .com >

03/27/2008 06:47 PM

To: "southwestern-coronado" <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Proposed Rosemont Copper Project

Here is a list of concerns I have with the Proposed Rosemont Copper Mine:

1. Once in operation, will the mine be able to expand beyond the original proposed site, to encompass more Federal and State lands?
2. Who will be responsible for any toxic cleanup and re-vegetation if Augusta Mining Company goes bankrupt?
3. Who will incur the financial responsibility for cleaning up after accidents-vehicular, fires, chemical spills?
4. How will surface water quantity and water quality in Davidson Canyon and Cienega Creek be protected?
5. How will Rosemont Copper prevent wells in nearby residential and agricultural areas from being depleted and how will they compensate the landowners?
6. What sensitive, and threatened and endangered species, might be affected by the mining proposal and how will impacts on these species be mitigated?
7. How will natural habitat and wildlife corridors be affected by the mining proposal and a proposed pipeline and how will these impacts be mitigated?
8. How does Rosemont Copper propose to prevent toxics from leaching out of the waste dumps and into the groundwater?
9. How will Rosemont Copper compensate Pima County for the damage their large, heavy vehicles will do to Highway 83?
10. How will Rosemont Copper guarantee the safety of school buses, tourist, and commuter traffic on Highway 83 given that, every 10-15 minutes, there will be large, heavy vehicles carrying dangerous chemicals and materials?
11. What studies have been done to determine how far and in what direction the airborne materials will travel and what their composition will be?
12. What will be done to protect nearby residents from toxic airborne materials?
13. What will be done to protect nearby residents, wildlife, and recreational users in the Coronado National Forest from the deleterious impacts of daily blasting?
14. Given that the mine expects to operate 24 hours a day, 7 days a week, how will the dark, night skies of the region be protected?
15. What will the cumulative impacts be of this mine and other proposed mining operations in the vicinity on wildlife, water quality, water quantity, and air quality?
16. How does Rosemont Copper propose to protect the long-term economic health of local communities?

Sincerely
Flash and Linda Sivley

~~~~~~
~~~~~~

"Trester, Eugene "
<etrester@pima .edu>
03/27/2008 10:00 AM

To: <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Rosemont Mine

Friends,
Thank you for inviting us to offer our thoughts on the prospects of a Rosemont Mining Operation in the Santa Rita Mountains. After much consideration of the pros and cons, my wife and I have become strongly opposed to the open-pit copper mine. The Santa Rita Mountains are a gift of incredible beauty from God for the enjoyment of all, both now and for generations to come . When all the pluses and minuses are weighed, in our opinion, we will loose incredibly by mining in this attractive area. Thank you very much for inviting and honoring our opinions. Gratefully, Dr. Eugene Trester & Mrs. Mary Frances Trester, 13601 E. Greystokes Drive, Vail, AZ 85641
IN BRIEF: WE ARE STRONGLY OPPOSED TO MINING IN THE SANTA RITA MOUNTAINS. THANK YOU.

mandy@nhvt.net
03/27/2008 08:31 AM

To: comments-southwestern-coronado@fs.fed.us
cc:
Subject: Proposed Rosemont Mine

I was very pleased to have had the opportunity to attend the recent informational meeting regarding the proposed Rosemont Mine in Green Valley a few evenings ago. I am writing to express my opinions and raise pertinent questions for your consideration.

Since I live very close to the huge Sierrita Mine Pond I am very conscious of that aspect of the proposed Rosemont operation. I was happy to see that they are intending to dry the slag material, so they will be building a giant Mesa, rather than a contained lake as looms above our home. But I happen to know that the Sierrita construction behind my house is only 350 or 400 feet high, while the Rosemont edifice will be 700 feet high in 19 years. It is also going to be very long. I would like to see a mock up of how it will appear from Route 83, one of the most scenic highways in this part of the state. In fact seeing a model of the proposed mine after operations are complete would be very informative.

I was told that all mining would cease in 19 years, and the company would do only reclamation after that. I do hope that adequate bond will be supplied to do this reclamation if the mine owners are unable to fulfill their obligations. I was surprised to learn that the Canadian Firm that is proposing this mine has no track record in mining. Perhaps I misunderstood. Do we know what other mining operations the principles have been involved in? It would be reassuring to know that their previous work was of the highest standard. If this consortium was formed for the single purpose of building and running this mine I wondered why they are not an Arizona, or at least a US corporation? Another question I have concerns whether the Rosemont mine could conceivably have it's license renewed and continue mining long after the 19 years are up. Are these licenses generally renewed, and should we expect yet another plan to be submitted to continue mining in Rosemont beyond the 19 years proposed?

The 2000 foot depth and 1000 acre size of the main pit concerned me also. Will they be close to ground water? Will this gigantic hole be filled in during reclamation?

I would also like to know why the Rosemont Mine is not going to build a railroad to move the ore? I believe there were several in the area that could be redeveloped. If not, I believe the big ore trucks will cause a lot of damage to the roads, not to mention congestion. Is Route 83 able to withstand that heavy truck traffic, or will it need immediate rebuilding? I do hope they do not plan to build an extensive network of roads to bring the ore to Sahuirita, or worse, to upgrade the Box Canyon road to bring it through Green Valley.

Sincerely, Mandy Vernalia

"Marshall@Magruder .org" <mmagruder
03/27/2008 12:27 AM
Please respond to "Marshall@Magruder.org"

To: Rosemont EIS <comments-southwestern-coronado@fs.fed.us>
cc:
Subject: Fw: Rosemont Copper Project EIS Comments Concering Scoping Meeting

resent with corrected URL.
-----Forwarded Message-----
>From: "Marshall@Magruder.org" <mmagruder@earthlink.net>
>Sent: Mar 25, 2008 8:32 AM
>To: comments-southwestn-coronado@fs.fed.us
>Subject: Rosemont Copper Project EIS
>
>Comments concerning the Scoping Meeting
>
>Attention: Ms Beverly Everson
>
>These comments are intended to be useful for future scoping meetings and are not intended to criticize; however, I must use the recent meetings as a point of reference.
>
>I attended the Scoping Meeting in Green Valley and was very disappointed with the method used by the Forest Service to present this important project to the public so the most meaningful comments will result in this phase of the EIS.
>
>A letter had been prepared in advance concerning infrastructure impacts of "construction and operation of infrastructure, such as utilities and their corridors on non-FS land" [quote from the FR]. I was unable to discuss this issue with anyone present. I also had prepared remarks intended to be presented orally during public comments. There was no available expertise or opportunity to make my remarks, both of which would have been beneficial to you and the NEPA process. My oral remarks would have synthesized this issue with any new information gathered during the scoping meeting.
>
>In addition, the following are for consideration to improve future scoping meetings:
>
>1. Provide meaningful displays.
>There were only three, (1) an overview of EIS process (good), (2) multiple copies of ONE display of the mining area, (3) one with some topos on one wall board. There were NO displays showing the mining operations, truck loads and routes, ore production process, proposed buildings, water cycle and budget, train information, and other significant issues presented in the Applicant's Mining Operations Plan (MOP).
>
>2. Present the Applicant's MOP to the public.
>In general, the public needs to hear such a presentation with slides showing timelines, graphs showing production numbers over time, etc. from the Applicant's MOP, the basis for the EIS. No copies of the MOP were available for the public (not everyone has Internet access). I would expect that the Applicant would have prepared, as a minimum, a simulation showing the mining site changes from present, construction, early mining, late mining, and reclamation phases of this process; environmental and economic impacts; etc. Why weren't the Applicant's views presented?
>
>3. Provide expertise.
>There were no Applicant's personnel presenting the technical issues at the displays or available to participate in providing answers or explanations. Why

was there no expertise present or available for every area in the MOP?
>
>4. Ensure the FS "independent" EIS Contractor is and remains "independent".
>The EIS Contractor appeared to be presenting the Applicant's view instead of being neutral and acting as a fact gatherer during this meeting. Should the EIS Contractor speak to the public as the Applicant's representative? [Never, in my view, is the correct answer, but when deliberating with the FS writing the EIS, always consider the Applicant's points of view]
>
>5. Conduct the Scoping Meeting as a "Meeting"
>There was no agenda, no speakers, no presentations, no questions, and no information recorded for the record. These would have occurred and made this part of the EIS scoping more successful, if there had been an Agenda such as:
>
> (1) Introduction by FS and lay out the ground rules for the meeting,
> (2) EIS Process Overview including the roles of EIS Contractor,
> (3) Scoping Overview and what we are doing today,
> (4) Project Overview by the Applicant including environmental impact plans,
> (5) Specific Project Issues (from the FR) presented by the FS as EIS goals,
> (6) Public Comments (3 minutes each) with caution not be repetitive, and
> (7) Closing Remarks by the FS with what is next in the EIS Process
>This would have provided much better results because "hearing" and "seeing" gives one an opportunity to consider diverse points of view and have a better understanding and knowledge of the project. This will lead to more diverse and better scoping comments, covering a wider range of issues to be considered for analysis.
>For example, have any comments been received with respect to molybdenum transportation and processing to the molybdenum plant on W. Pima Mine Road, adjacent to the Santa Cruz River, inside the 100-year floodplain, and across the street and upstream of the Tohono O'Odham Reservation (and when flooded, will pollute that reservation with toxic molybdenum in various processing stages)?
>Correlation of such diverse factors is facilitated by hearing others and by not having presentation such scoping issue comments will not be made. Why wasn't a meeting conducted?
>
>(6) Provide a public record of every meeting.
>Preparing, publishing and posting the transcripts of meetings are essential to keep all parties informed. The "green" comment sheets collected at the Scoping Meeting are important but will never be available to others. Public comments (see (6) above) should be made available by and to all concerned. Transcripts contain what was actually said, provide a common reference, and can be useful throughout the EIS process. Will the "green sheets" have the same usefulness? [Note: your comments concerning what you wanted were excellent and would not have been overlooked if presented during a real "meeting."] Where is the public record of these scoping meetings?
>
>Arranging this kind of an Agenda, should be considered as this approach should have easily avoided reading news articles about the unsuccessful scoping meeting in Patagonia.
>
>Factual and objective information exchanges are essential for the NEPA process to work. So far, this isn't happening as I know you want to produce a Final EIS that ALL decision makers can use so the same set of facts determine if this project is in the public interest.
>
>Sincerely,
>
>
>Marshall Magruder
>PO Box 1267

>Tubac, AZ 85646
>marshall@magruder.org
>520.398.8587
>
>25 March 2008

080325-EIS Scoping Meetng Comments.doc 080319-Rosemont Scoping Comments by Magruder.doc

Comments concerning the Scoping Meeting

Attention: Ms Beverly Everson

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A letter had been prepared in advance concerning infrastructure impacts of "construction and operation of infrastructure, such as utilities and their corridors on non-FS land" [quote from the FR]. I was unable to discuss this issue with anyone present. I also had prepared remarks intended to be presented orally during public comments. There was no available expertise or opportunity to make my remarks, both of which would have been beneficial to you and the NEPA process. My oral remarks would have synthesized this issue with any new information gathered during the scoping meeting.

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3. Provide expertise.
There were no Applicant's personnel presenting the technical issues at the displays or available to participate in providing answers or explanations. Why was there no expertise present or available for every area in the MOP?

4. Ensure the FS "independent" EIS Contractor is and remains "independent".
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5. Conduct the Scoping Meeting as a "Meeting"
There was no agenda, no speakers, no presentations, no questions, and no information recorded for the record. These would have occurred and made this part of the EIS scoping more successful, if there had been an Agenda such as:

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(3) Scoping Overview and what we are doing today,
(4) Project Overview by the Applicant including environmental impact plans,
(5) Specific Project Issues (from the FR) presented by the FS as EIS goals,
(6) Public Comments (3 minutes each) with caution not be repetitive, and
(7) Closing Remarks by the FS with what is next in the EIS Process

This would have provided much better results because "hearing" and "seeing" gives one an opportunity to consider diverse points of view and have a better understanding and knowledge of the project. This will lead to more diverse and better scoping comments, covering a wider range of issues to be considered for analysis.

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Factual and objective information exchanges are essential for the NEPA process to work. So far, this isn't happening as I know you want to produce a Final EIS that ALL decision makers can use so the same set of facts determine if this project is in the public interest.

Sincerely,

Marshall Magruder
PO Box 1267
Tubac, AZ 85646
marshall@magruder.org
520.398.8587

25 March 2008

Marshall Magruder
PO Box 1267
Tubac, AZ 85646

19 March 2008

Team Leader, Rosemont Copper Project
Coronado National Forest
300 West Congress Street
Tucson, Arizona 85701

Subject: NEPA Scoping Comments for the Rosemont Copper Project Environmental Impact Statement (EIS)

References:
(a) Tucson Electric Power Company Sahuarita-Nogales Transmission Line Final Environmental Impact Statement, DOE/EIS-0336, January 2005

Enclosures:
(1) "Vail to Valencia 115 kV Upgrade Project" UES handouts, February 2008
(2) "Rosemont Project Mine Plan of Operations, section 2.7 and Appendix C", 11 July 2007.
(3) "Appendix G, Arizona Planned HV transmission additions" from the ACC Fourth Biennial Transmission Assessment for 2006-2015, page 152, 30 January 2007.
(4) "Vail Area 138 kV System Project" TEP handout, April 2007

Summary.
These comments concern the environmental impacts associated with the energy requirements for the Rosemont Copper Project. The electrical energy requirements for this project fail to contain cumulative environmental impacts in both Santa Cruz and Pima Counties. None of options presented by Rosemont are in the public interest as the assumptions are erroneous. In particular, the preferred electrical transmission line (Vail to Nogales) does not exist. A Comprehensive Environmental Certification (CEC) Application has not been submitted to the Arizona Power Plant and Transmission Line Siting Committee (Siting Committee) that will have significant issues to decide before a Vail-Nogales transmission line could be approved. The Line Siting Committee has 12-months to recommendation approval, modify or deny a CEC Application to the Arizona Corporation Commission (ACC) that may also approve, modify or deny the CEC Application. Many unresolved issues remain before any electricity can be provided to Rosemont Copper, as total environmental effects are assessed by the Line Siting Committee and in this EIS. It is unknown if the ACC and/or the Line Siting Committee are "cooperating agencies" in this EIS; however, if not, then resultant decision conflicts might result.

Background.
At present, the UNS Electric, Inc. (UNSE) Santa Cruz service area has a single 115 kV transmission line from the Nogales Tap substation in southern Tucson that goes through four substations to be distributed to its customers. Santa Cruz County is serviced by three utility companies. The Sulphur Springs Valley Rural Cooperative service area services to

the east of the Santa Rita Mountains and the TRICO Rural Cooperative service area in the western parts of Santa Cruz County. UNSE has the largest service area primarily the Santa Cruz Valley, to the east of the Santa Rita Mountains.

UNSE operates four distribution substations on its 115 kV transmission line, the Kantor substation east of Amado, the Cañez substation in central Rio Rico, the Sonoita substation in southern Rio Rico and the Valencia substation serving the Nogales distribution area.

Reliability Problem Mitigation.
On 2 November 1999, the Arizona Corporation Commission (ACC) approved ACC Decision No. 62011 that mandated a second transmission line to be operational by 31 December 2003. This was to correct reliability problems in the Santa Cruz service area. On 15 January 2001, the ACC modified and then approved a Siting Committee CEC for a two-circuit 345 kV line from Sahuarita via a new "Gateway" substation in Nogales to terminate at Santa Anna, Sonora, Mexico using a "western" corridor. The ACC disapproved "central" and "eastern" corridors. A Department of Energy (DOE) Presidential Permit was required to cross the US-Mexican border. The Final EIS for this project was completed and published in the *Federal Register* in March 2005 (reference a). The Coronado National Forest (CNF), in this reference, disapproved the "western" corridor. Thus, without ACC-CNF agreement, this "second" transmission line to the Santa Cruz service area, has no approved routes. A NEPA Record of Decision (ROD) has not been issued for this project.

In late 2004, due to the changing circumstances and situation, the ACC re-opened Decision No. 62011 to resolve the remaining reliability issues in the Santa Cruz service area. Hearings were held for five days in August-September 2005. To date, the ACC Administrative Law Judge has not submitted to the Commission a Recommended Opinion and Order (ROO). During these hearings, most of the ten intervenors agreed that upgrading the existing 115 kV to a "double-circuit" configuration meets the ACC-mandated second transmission line mandate and provides adequate electricity to meet the future needs for Santa Cruz service area for several decades.

In February 2008, two local meetings were held by UES to discuss a proposed "Vail to Valencia 115 kV Upgrade Project". For the handouts see enclosure 1. This proposal is a single-circuit 115 kV to 138 kV upgrade from the Nogales Tap in Tucson to Nogales about 60 miles to the south. A new line is proposed to be constructed from TEP's Vail substation in eastern Tucson to UNSE's Nogales Tap substation in southern Tucson. As of this date, neither TEP nor UNSE have not applied to the Siting Committee for a CEC. The CEC permit is required by Arizona Revised Statutes (A.R.S.) 40-360 to 40-360.13 and Arizona Administrative Code R14-3-201 to R14-3-113.

Companies.
There are several companies involved. Until 11 August 2003, Citizens Communications Company owned and managed Santa Cruz service area assets as a public service company in Arizona when UniSource Energy Inc. (UNS) acquired this company. UniSource Energy is a holding company for three public service companies. The largest is Tucson Electric Power Company (TEP) that has service areas in Pima and Cochise Counties, and is an Arizona public service company. UniSource Energy created a holding company, called UniSource Energy Services (UES) to oversee two public service companies; UNSE

has service areas in Santa Cruz and Mohave Counties and UNS Gas, Inc. (UNSG) with service areas in five Arizona counties.

Due to IRS bond tax restrictions, TEP is allowed to serve customers only in Pima and Cochise County and UNSE in Santa Cruz and Mohave Counties. Both UNSE and TEP have this two-county service area restriction.

The existing 115 kV transmission line is owned and operated by UNSE and is the only source of imported power to this service area. This line is not owned by TEP; however, in January 2000, Citizens (now UNSE) and TEP signed a Project Development Agreement (PDA) whereby TEP would manage and build the Sahuarita-Nogales-Mexico dual-circuit 345 kV transmission line and a Gateway substation system.[1] UNSE has contracted with TEP to perform most transmission line functions for UNSE; however, as a UNSE ratepayer, separation of these two public service companies is critical when it comes to determine "rates" for each company. When the separation of these two public service companies is not clear, costs might become mingled, to the detriment of both companies. The ACC makes decisions for rate cases and demands each company account for all expensed.

The Rosemont Copper Electric Plan.
On 11 July 2007, Rosemont Copper submitted the "Rosemont Project Mine Plan of Operations" (reference c). Section 2.7 of this report is titled "Electrical Power Supply" with Appendix C containing an Electrical Load Summary (enclosure 2). It should be noted that the connected load for Rosemont Copper is 133 kV (enclosure 2, Appendix C) while at 138 kV transmission line can carry 100-120 MW, thus at least two 138 kV or one larger capacity transmission line is required for Rosemont Copper.

This "electrical plan" shows a "Preferred Electrical Supply Transmission Supply Route" in Figure 1 below, which is from the Mine Plan of Operations. Four options were proposed. Each will be discussed below, as one reads Section 2.7. Option Four is the "preferred" route.

[NB: most of the answers below will be determined during Siting Committee proceedings]

Option 1 – Interconnection with TEP Line Serving Santa Cruz County (section 2.7.1).

Q-11. Why isn't UNSE indicated at the owner of the 115 kV line?

Q-12. There is NO existing Vail-Kantor line (as there are no transmission lines between Vail and the Nogales Tap substations), so how can a 115 kV Vail-Kantor line be upgraded?

Q-13. There are significant customer/ratepayer costs for changing from the DOE Western Power Administration (WAPA) 115 kV line to a 138 kV TEP line originating at Vail. Has the impact of this customer cost been assessed which impact UNSE Santa Cruz service area customers?

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[1] A proposed new Gateway substation west of Nogales with have double-circuit 345 kV transmission lines to/from Mexico and TEP's South substation in Sahuarita and a single-circuit 115 kV line to/from the Valencia substation in central Nogales.

Q-14. What is the cost of this new substation and will UNSE Santa Cruz service area customers pay for a new 138 kV switching station on this UNSE-owned 115/138 kV line?

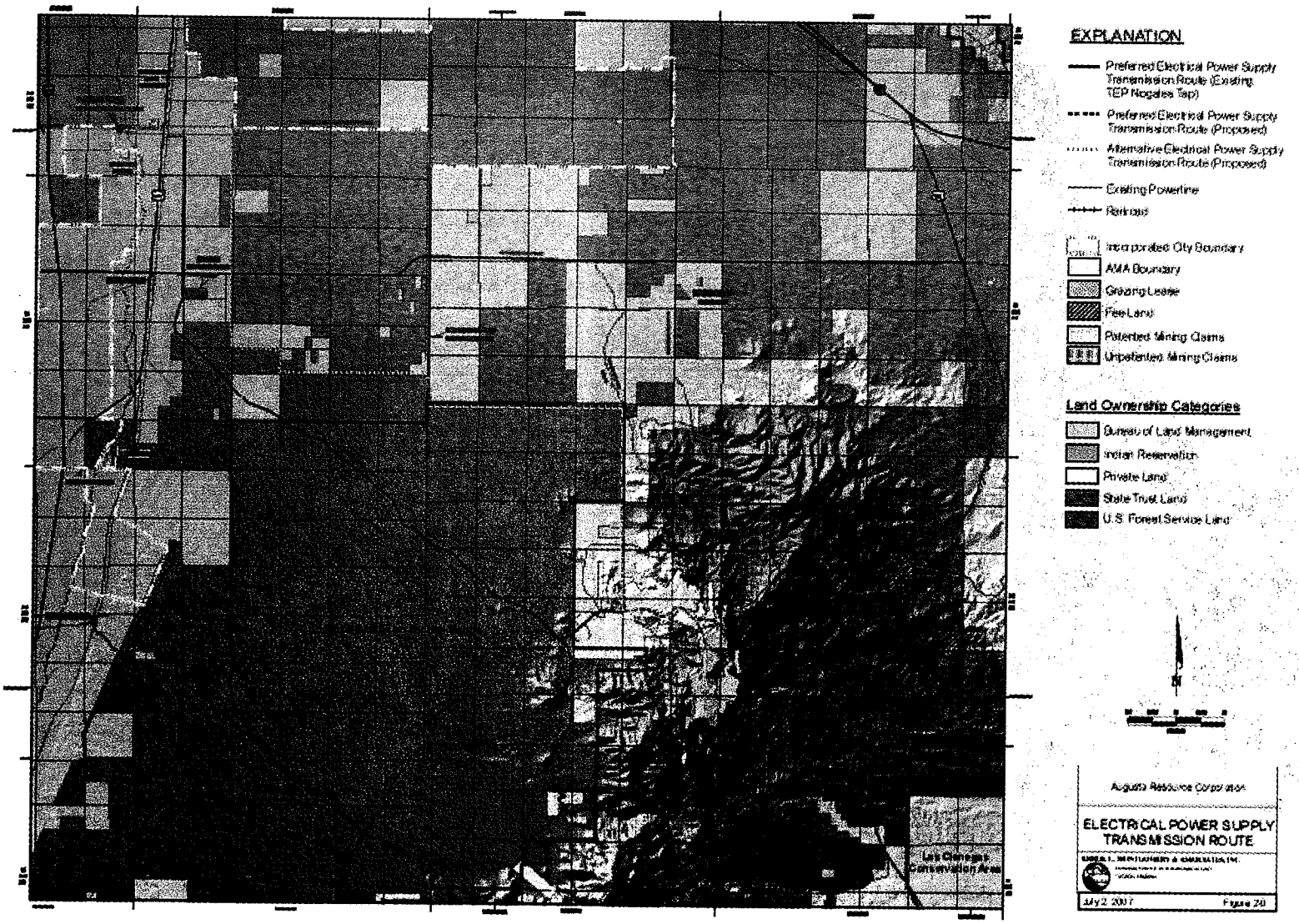

Figure 1. - Transmission Line Options for Rosemont Copper Electrical Supply.

Q-15. What does "partially borne by TEP" mean in terms of specific rate increases for UNSE Santa Cruz service area customers?

Q-16. Why even consider this option for 75 MW of power if it does not provide the 132 MW of power required by Rosemont Copper?

<u>Option 2 – Interconnection with SWTC Sahuarita 230 kV Substation. (2.7.2)</u>

Q-21. What are the cost differences between Options 1, 2, 3, and 4?

Q-22. If the project will overload the existing 345/230 kV Bicknell transformer, can a new transformer be acquired, and at what additional cost?

Q-23. Has this option been "noticed" to TRICO customers by Public Notices in the appropriate newspapers?

Q-24. TEP is not involved for this option. Will TEP manage this SWTC project as TEP will have no role if this option is selected?

Q-25. What will be the costs borne by TRICO ratepayers for Option 2?

Option 3. Interconnection with TEP South 345/138 kV substation. (2.7.3)

Q-31. Higher voltage transmission lines have less line loss, thus transmit electricity at lower cost per mile than a transmission system at a lower voltage. What are the life-cycle cost differences between a 138 kV, 230 kV, and 345 kV transmission systems to support Rosemont Copper?

Q-32. Why is TEP the service provider, when TRICO (SWTC) might be able to provide lower cost services to Rosemont Copper?

Q-33. What is the cost per mile for 138 kV and the cost the appropriate 138 kV transformers?

Q-34. Is the only problem with this option is the 12 miles length of the line?

Q-35. The TEP South substation is inside the 100-year flood plain. Due to its criticality for Tucson's power, it should be required to meet the 500-year flood criteria. How will TEP meet the potential floods that routinely occur on the Santa Cruz River that is adjacent to the South substation (reference a, Appendix C, Figure 2, p. C-4) which shows it is inside the 100-year floodplain?

Option 4. Interconnection with TEP South Line to the TEP Vail-Kantor Line. (2.7.4)

Q-41. What happens if the Line Siting Committee CEC specifies a different alternative than the Vail Kantor 138 kV line?

Q-42. What are the specific relationships (agreements) between UNSE (who owns the existing 115 kv line) and TEP?

Q-43. Will UNSE ratepayers pay any costs for the Rosemont Copper installations?

Q-44. Are two lines, one from South substation and one from Vail being proposed by this option (the two sources)?

Q-45. Since UNSE requires two circuits, based on the reopened ACC Decision 62011 hearings in 2005, how will a third circuit for Rosemont fit on these UNSE utility poles?

Q-46. What are the mean time between failure (MTBF) and mean time to repair (MTTR) (both are common reliability engineering measures) for each option being proposed?

A Fifth Option, Line Siting Case No. 137 for the Vail 138 kV System Project.
This TEP proposal provides another option to provide power to Rosemont Copper. This project provides for double-circuit 138 kV transmission lines to go southwest from the Vail substation to a new Cienega substation in Phase 1 and a new Mountain View substation in Phase 2 to the south of Interstate 10, next to State Route 83 that goes directly to the Rosemont Copper mine (see enclosure 4).

Q-51. Will the proposed Mountain View substation be considered as a power source for Rosemont Copper?

Q-52. How much power will be available at the Mountain View substation, if Phase 2 is ever build, after servicing its distribution demands?

Q-53. When is the Mountain View substation to be operational?

Preliminary Power Flow Analysis. (2.7.5)

Q-61. Why was 2010 assumed for the power flow analysis since the proposed upgrade shows a Vail-Nogales line is not expected to be complete in 2012? (See enclosure 3)

Studies "show that the Vail substation could serve up to 75 MW of mine load if 20 MW of generation is on-line at the Valencia generation facility, or up to 100 MW, if the Gateway Project were in service." The power requirements for a mine are continuous, varying little during the 24-hour day.

Q-62. How can 75 MW + 20 MW meet the 133 MW Rosemont Copper 133 MW load requirements in Appendix C?

Q-63. The peak power requirements for the UNSE Santa Cruz service area is 75.4 MW reached on 28 June 2007. How will power be furnished to the Santa Cruz service area when over 75 MW or 100 MW of power is required?

Q-64. How can 100 MW from the Gateway meet the 133 MW load requirements?

Q-65. What authority does TEP have that require turbines to run in Nogales to furnish power for Rosemont Copper?

Q-66. At present, there is inadequate amount of natural gas to continually run the 65 MW of generation capabilities that exist in the City of Nogales so diesel fuel is used when natural gas runs out. What are the future natural gas and electrical demands for the Santa Cruz service area in 2015 and 2025 and how much local generation can be made available to continuously meet the additional power requirements for Rosemont Copper?

Q-67. The City of Nogales is an EPA non-attainment of compliance requirements for clean air. What are the projected air pollution impacts for 2015 and 2025 that running 20 MW to 65 MW of natural gas or diesel turbines in Nogales have on air quality in that city?

Q-68. Is there any basis to assume the Gateway Project will be on line in 2010 as TEP assured the Commission it would be online by 31 December 2003?

Q-69. Since when did the Gateway substation move from NW of Nogales (in reference a) to "near Sahuarita"?

Q-70. Why is there any impacts between the UNSE Sonoita substation and a Rosemont substation that require "pre-project" voltage levels to be corrected by shunt capacitors?

Q-71. Why are upgrades required to "certain SWTC facilities" to mitigate any impacts due to outages" if Option 4 is selected?

TEP has a significant portion of its power sold to mines, such as those in Green Valley. In 1996, for example, 925,000,000 MW-hrs were purchased by these mining activities, about 10% of the total retail sales of 9,201,000,000 MW-hrs. The Rosemont Copper mine will consume 1,165,000,000 MW-hrs (=133 MW x 8,760 hrs/year) when operating at full capacity demand of 133 MW/hr. TEP uses over 95% coal-fueled electrical generation plants, thus, for 133 MW of power, then about 250,000 tons of Carbon Dioxide (CO2), 830 tones of Nitrite oxides (NOx), and 250 tons of Sulfur Dioxide (SP2) will be required by TEP to furnish the electrical power necessary for Rosemont Copper.

Q-72. How will Rosemont Copper compensate for these 250,000 tons of CO2, 830 tons of NOx and 250 tones of SO2 that will be necessary to generate the electricity required for this mine?

Q-73. Will another source, with less coal-fueled electrical generation be assessed during the EIS process?

Q-74. How much water will be required for the coal-fired electrical generators required for the Rosemont Copper mine?

Q-75. Will Rosemont Copper also "recharge" the Tucson Aquifer to account for the water necessary to generate Rosemont Copper's electricity?

Description of Proposed Electrical Power Supply. (2.7.6)

Q-81. The existing 115 kV line or upgraded to 138 kV in Option 4 already transverses the Santa Rita Experimental Range (see Figure 1 above). Is this line to modified to avoid this range, contrary to Figure 1?

Q-82. TEP has a very poor track record in forecasting completion dates for its projects (as discussed above for its 345 kV project to Mexico). How can TEP confirm the date that a proposed Vail-Kantor transmission line and upgrades be completed since no application for such a line has been submitted to the Line Siting Committee?

Q-83. Can a "Vail-Kantor" 138 kV transmission line meet all the power requirements for Rosemont Copper?

Q-84. What is the long-term impact of the 138 kV line radiated electro-magnetic and electric fields on pipeline corrosion in the parallel fresh water pipeline route?

Q-85. Does the mean time between failure for the Option 4 11.6 mile transmission system exceed 300 years as required by the National Electrical Reliability Council (NERC), or its successor's reliability criteria?

Q-86. What is the impact of fire and smoke on the capabilities of the proposed UNSE 138 kV line to furnish power to Rosemont Copper?

Q-87. Is the 7.2 MW of power required for the well fields included in the loads in enclosure 2 (Appendix C) or is the total demand for Rosemont Copper over 140 MW (= 133 + 7.2)?

Some General Questions:

Q-100. Where is a detailed trade-off study comparing the four electrical supply options?

Q-101. Will any transformers for the transmission and distribution lines contain any PCBs or other toxic substances?

Q-102. What is the impact on Rosemont Copper if the electrical supply required can not be provided until 2012, 2015, or 2018?

Q-103. What was the basis to select TEP to be the power provider to Rosemont Copper compared to self-generated power using natural gas from the El Paso Natural Gasline that runs parallel to Interstate 10?

Q-104. How can UNSE have a double-circuit 138 kV line to Nogales if one circuit of that line is used for Rosemont Copper?

Q-105. In section 2.8.2 (Legal and Regulatory Considerations), the role of obtaining environmental capability certification from the Line Siting Committee and its approval by the ACC are omitted. Will this omission be corrected and considered?

Q-106. When will the CEC Application for the proposed TEP and/or UNSE and/or SWTC transmission lines be submitted to the Line Siting Committee?

Cumulative Effects involving Water and Air.
In the West, water is a dominate natural resource and must be considered comprehensively for all decisions. When performing the NEPA Cumulative Effects analyses, it is critical that the impact on the whole water cycle be considered for the project. A natural gas pipeline or transmission line has very little direct impact on water resources; however, each may have significant indicted impacts. A 100 MW transmission line that will

support another 50,000 families needs to consider the water resource impacts that the line will for these new families using this energy. At 200 gallons per day per captia, over 250,000,000 gallons are required.

Q-201. If the end users do not have that water available, where will it come from?

Q-202. How much water is required to generate that 100 MW, based on the logical generation anticipated for this community?

Q-203. If the community is already in an EPA non-attainment area, how will the additional "exurban" commuters change the quality of air?

Q-204. Both ends and intermediate points along the "system" must be assessed and extrapolated for the life-cycle of the project, usually 50 or more years into the future.

Anything less than a complete analysis of the above issues and related factors is an irresponsible, incomplete, and misleading environmental assessment. A complete, high quality, and informative environmental analysis is absolutely necessary for the many jurisdictional decision makers involved with the Rosemont Copper project.

Sincerely,

Marshall Magruder
marshall@magruder.org
520.398.8587

Enclosures:
(1) "Vail to Valencia 115 kV Upgrade Project" UES handouts, February 2008
(2) "Rosemont Project Mine Plan of Operations", section 2.7 and Appendix C, 11 July 2007.
(3) "Appendix G, Arizona Planned HV transmission additions" from the ACC Fourth Biennial Transmission Assessment for 2006-2015, page 152, 30 January 2007.
(4) "Vail Area 138 kV System Project" TEP handout, April 2007