UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

FEB 13 2012

OFFICE OF THE
REGIONAL ADMINISTRATOR

Colonel R. Mark Toy
District Engineer, Los Angeles District
U.S. Army Corps of Engineers
PO Box 532711
Los Angeles, California 90053-2325

Subject: Permit Application No. 2008-00816-MB for the proposed Rosemont Copper Mine Project, Rosemont Copper Company, Pima County, Arizona

Dear Colonel Toy:

On January 5, 2012, the US Environmental Protection Agency (EPA) provided comments in response to your District's Public Notice for a Clean Water Act (CWA) Section 404 permit for the proposed Rosemont Copper Mine (enclosed). The 4,750 acre mine, proposed primarily on Coronado National Forest lands southeast of Tucson, would eliminate and/or significantly degrade hundreds of acres of aquatic and riparian resources including waters of the United States (waters), such as wetlands, springs, seeps and riffle-pool complexes. The significance of these impacts to sensitive and protected aquatic resources, and concerns regarding compliance with federal regulations (40 CFR 230), led us to identify the permit action as a candidate for the US Department of the Army and the EPA headquarters review pursuant to our agencies' Memorandum of Agreement implementing CWA Section 404(q).

In coordination with your staff in Tucson, as well as other federal and state agency regulatory authorities, we have been working to identify data gaps and clarify issues related to the many environmental uncertainties this project raises (please see our enclosed detailed comments). However, given the complexity of the project and the lack of any new substantive information provided since our January 5, 2012 letter, the EPA is now moving to preserve the option to seek higher level review of your pending permit decision. At this time, we respectfully reaffirm our objections on the basis that permit approval will have substantial and unacceptable impacts to "aquatic resources of national importance" (ARNI), including Cienega Creek and Davidson Canyon.

In summary, our enclosed comments detail specific deficiencies in the application related to each of the regulatory restrictions on 404 discharges. Of particular concern, the current proposal:

1. includes an inadequate analysis of off-site and on-site alternatives to demonstrate that the proposal is the least environmentally damaging practicable alternative (LEDPA);
2. provides questionable hydrological assessments concluding that impacts to downstream flows, sediment balance, and chemical contamination will not be significantly adverse or violate state standards;
3. provides no biological assessment (BA) to guide a determination whether the permit action would jeopardize the continued existence of any of ten federally listed threatened or endangered species;

4. would contribute to the significant degradation of Arizona's rare and fragile wetland resources, reduced by one third over the last century alone;
5. provides no plan to compensate for unavoidable impacts to waters of the United States; and
6. could negatively impact recreation, aesthetics, and ecotourism, a $2.95 billion regional economy.

The above considerations, if unresolved, could provide an adequate basis for permit denial under the regulations in any environmental setting impacting waters of the U.S. In this setting, where virtually pristine ecological and recreational public resources—including state designated "Outstanding Waters"—thrive in a desert environment, it is vital that CWA protections are rigorously applied. Based on the information currently available, the EPA finds this project will result in the significant degradation of waters of the U.S., including substantial and unacceptable impacts to ARNI. This letter follows the field level procedures outlined in the August 1992 Memorandum of Agreement between the EPA and the Department of the Army, Part IV, paragraph 3(b) regarding Section 404(q) of the Clean Water Act.

Thank you for your ongoing partnership implementing the programs of the CWA and protecting human health and the environment. Please call me at (415) 972-3572 with any questions, or have your Regulatory Division Chief contact Jason Brush, our Wetlands Office Supervisor, at (415) 972-3483.

Sincerely,

Jared Blumenfeld

Enclosures:

EPA's Detailed Comments on the Proposed Rosemont Copper Mine 404 Permit Application
EPA letter dated January 5, 2012

cc: US Fish and Wildlife Service, Phoenix
US Fish and Wildlife Service, Tucson
US Forest Service, Coronado National Forest, Tucson
Bureau of Land Management, Tucson
Tohono O'odham Nation, Office of the Chairman and Vice Chairwoman
Arizona Department of Environmental Quality, Phoenix
Arizona Department of Environmental Quality, Tucson
Arizona Department of Game and Fish, Phoenix
Pima County Administrator's Office, Tucson
Rosemont Copper Company

DETAILED COMMENTS ON THE PROPOSED ROSEMONT COPPER MINE 404 PERMIT APPLICATION # 2008-00816-MB

I. Project Description

The Rosemont Copper Company (subsidiary of Canadian Augusta Corporation) proposes to develop the Rosemont Copper Mine Project in Pima County, AZ, approximately 30 miles south of the city of Tucson. The mine would occupy ~4,750 acres of National Forest Service, Bureau of Land Management and some privately owned lands, with the primary land holding being Coronado National Forest. The mine is projected to produce ~4.7 billion pounds of copper, 90 million pounds of molybdenum and 54 million pounds of silver over the proposed 25 year mine life.

Mining will be conducted using conventional open-pit techniques. Waste rock will be blasted and transported by haul truck to a storage area. Ore will be blasted and either transported by haul truck to a leach pad and processed by leaching (oxide ore), or crushed and loaded onto a conveyor for conventional sulfide milling (sulfide ore). Tailings will be stored using a dry stack tailings technique. The placement of waste rock will include perimeter buttresses, with placement of the perimeter of the dry stack tailings storage areas to provide structural and erosional stability of the tailings pile.

The copper concentrate from the milling operations will be shipped off site to a smelter. Leach ore will be placed on the heap leach pad. Solutions from the pad will be collected in a solution pond and then processed through the solvent extraction-electrowinning plant. Copper cathodes generated from the plant will be transported off site for further processing.

The proposed project includes a 950 acre mine pit, 1,460 acre waste rock storage areas, 126 acre heap leach area, 987 acre dry-stack tailings facility, ancillary facilities and structures, access and haul roads, and off site water and power and transmission lines.

II. Environmental Setting

The project site elevation ranges from 4,500 feet to 6,824 feet above mean sea level located in the Semidesert Grasslands biotic community that transition into Madrean Evergreen Woodland association on the higher slopes of the Santa Rita Mountains. The site supports a complex network of ephemeral and intermittent streams that provide critical surface and groundwater flow into perennial Cienega Creek.

The aquatic resources of the Cienega Creek watershed are located in a near pristine landscape rich in biodiversity. Four major drainages occur in the project area: Wasp, McCleary, Scholefield, and Barrel Canyons. Scholefield, Wasp and McLeary Canyons drain to Barrel Canyon which joins Davidson Canyon approximately 4 miles east of the project area. Davidson Canyon is a tributary to perennial Cienega Creek. Barrel Canyon is the largest of the four major drainages with an average channel width of 51 feet. The project site also supports sixty-three seeps and springs. The waters of the U.S. on the project site, in most instances, have riparian habitats associated with them.[1]

[1] Onsite Riparian habitat Assessment and Impact Analysis – Rosemont Project. Prepared for Rosemont Copper Company by WestLand Resources, Inc.. April 2010 (page 15).

III. Project Impacts

The proposed project will have a variety of impacts to the aquatic environment including direct fill, secondary impacts resulting in functional degradation, and habitat conversion over a large geographic area. The project will result in the loss or conversion of approximately 7,000 acres including semi-desert grassland, Madrean evergreen woodland, riparian, and Sonoran desert scrub communities that form a vast, largely unfragmented, natural landscape. [2]

The proposed permit will authorize the direct fill of at least 38.6 acres of waters (18 linear miles of stream comprised of up to 154 individual drainages), including some direct impact to aquatic habitats associated with several springs.[3] Secondary (indirect) effects on the aquatic environment include dramatic and persistent changes to hydrologic and hydraulic regimes within the project and adjoining watersheds, adversely affecting the functioning of sensitive and regionally significant downstream receiving waters, including wetlands. For example, the Forest Service estimates 1,364 acres of riparian habitat (including a likely significant amount of jurisdictional riparian wetlands[4]) would be degraded or lost from changes to ground and surface water hydrology from the project. Water quality downstream of the project site will be degraded from changes in sediment loads, increasing suspended solids in some areas and altering channel morphology through aggradation and scour. Throughout the Cienega Creek watershed, impairment of floodplain and ecosystem services including water filtration, groundwater recharge, and flood attenuation are probable, as is the disruption of landscape-scale hydrological and ecological connectivity, decreases in regional biodiversity, and a loss of ecosystem stability.

The project will adversely affect three types of "Special Aquatic Sites" identified in the 404(b)(1) Guidelines (wetlands, sanctuaries and refuges, and riffle and pool complexes (40 CFR 230.40 – 45)), as well as Tier 3 "unique" waters (portions of Davidson Canyon and Cienega Creek that are designated by the State of Arizona as "Outstanding Arizona Waters"). These aquatic resources and adjoining habitat support ten federally listed endangered or threatened species for which project impacts are reasonably foreseeable (for example, filling streams will fragment currently continuous wildlife migration corridors).

Impacts to Special Aquatic Sites. Three of the six Special Aquatic Site types described in Subpart E of the Guidelines occur on or adjacent to the proposed project and would be adversely affected by the copper mine. Because of their special ecological characteristics of high food-web productivity, physical habitat critical for all life stages of aquatic life, water quality functions, and other important and easily disrupted ecological functions, these aquatic resources are given special recognition under CWA regulations.[5] Collectively, the Special Aquatic Sites in the project area play a regionally significant role in maintaining the existing, high quality functions and services in this watershed.

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[2] This acreage figure includes impacts associated with the mine site, transmission lines, and other project infrastructure. See DEIS, Ch. 3, Table 98.

[3] Pima County has conducted an independent GIS analysis of the linear and lateral extent of stream channels within the area affected by the Mine Plan of Operations. Pima County estimates that over 100 miles of streams and 116 acres of stream channel and floodplain (< 10-yr. floodplain) will be affected by the proposed project (Letter from Pima County to U.S. Army Corps of Engineers, dated 19 January 2012). Given this data, and the fact that the waters of the U.S. jurisdictional determination is unverified by the Corps, numbers in the PN may underestimate actual impacts to jurisdictional waters authorized by the proposed permit.

[4] DEIS for the Rosemont Copper Project (11 December 2011), Chapter 3, Table 98.

[5] 40 CFR § 230, Subpart E.

Sanctuaries and refuges are areas designated under state and federal laws or local ordinances to be managed principally for the preservation and use of fish and wildlife resources.[6] Portions of lower Davison Canyon and Cienega Creek are designated by the State of Arizona as "Outstanding Waters" (see discussion, below) and are within the Cienega Creek Natural Preserve (CCNP), a 4,000 acre sanctuary along 12 stream miles noted for its ecological significance and natural beauty as a desert riparian oasis.[7] In addition, portions of Empire Gulch lie within the Las Cienegas National Conservation Area (LCNCA), administered by BLM, a 45,000 acre preserve set aside in large part to protect riparian wetlands and native aquatic organisms including endangered fish and amphibians.

The proposed project is likely to have significant impacts to the downstream reaches of Davidson Canyon, Empire Gulch and Cienega Creek. The state designation of Davidson Canyon and Cienega Creek as "Outstanding Waters" affords them special protection, prohibiting any lowering of water quality. Federal regulations for state-designated outstanding waters similarly state "Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected" (40 CFR 131.12(a)(3)). At this time, the applicant has not provided information demonstrating that modification to surface and groundwater hydrology, sediment transport and pollutant discharges to Davidson Canyon and Cienega Creek as a result of the proposed project will not result in any lowering of water quality, or other unacceptable impacts to onsite and downstream waters.

Wetlands and riffle-pool complexes are also Special Aquatic Sites that will be affected by the secondary effects of groundwater drawdown from the proposed project.[8] Although these resources have not been delineated, a significant proportion of streams and riparian areas are likely to include these special aquatic sites. Riffle and pool complexes are especially valuable as habitat for fish and wildlife, supporting important feeding, spawning, rearing, and refuge functions for aquatic and terrestrial species.

The proposed project will likely significantly change the balance of water along portions of Davidson Canyon and Cienega Creek within the CCNP, and Empire Gulch Creek within the LCNCA adversely impacting special aquatic sites. Specifically, secondary impacts from project-related groundwater drawdown are likely to change and disrupt breeding, spawning, rearing, and migratory movements, or other critical life history requirements of fish and wildlife resources. For example, pools and riffles used by Gila chub, Gila topminnow, and longfin dace would likely shrink or disappear within the CCNP and LCNCA as a result of mine-related groundwater drawdown. Pools and riffles would be especially vulnerable to desiccation during the typically driest months of May and June, and/or during droughts when intermittent pools characterize Cienega Creek embedded within long reaches of dry streambed. Seemingly small reductions in streamflow caused by groundwater drawdown during critically dry months could cause portions of Cienega Creek to stop flowing.[9] Similarly, groundwater drawdown could be expected to result in the loss of springs, and stress and mortality to riparian habitat, including wetlands.

Desert springs, often the sole sources of water for wildlife, support wetland ecosystems including rare and endemic species.[10] Human changes to groundwater are one of the greatest threats to long-term

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[6] 40 CFR § 230.40.
[7] http://rfcd.pima.gov/wrd/landmgt/cienegapreserve/
[8] Wetlands are defined at 40 CFR § 230.41. Riffle-pool complexes are defined at 40 CFR § 230.45.
[9] DEIS for the Rosemont Copper Project (11 December 2011), Chapter 3, Page 387.
[10] Patten, P.T., L. Rouse and J.C. Stromberg. 2007. *Isolated Spring Wetlands in the Great Basin and Mojave Deserts, USA: Potential Response of Vegetation to Groundwater Withdrawal.* Environmental Management DOI 10.1007/s00267-007-9035-9. 16pp.

sustainability of groundwater dependent ecosystems in arid and semi-arid regions.[11] Direct and indirect impacts to these seeps and springs as a result of the preferred alternative will affect the aquatic biota dependent on the range of spring-associated water sources. Following groundwater withdrawal, should the spring continue to flow, the wetlands supported by the outflow would be truncated. The amount of area suitable to support wetland species would be greatly reduced and the species least tolerant of drying conditions would be extirpated first and eventually replaced by transition upland species.[12] Sixty-three springs are expected to be lost from direct disturbance or lowering of the groundwater table during construction and operation.[13] Impacts to Scholefield No. 1 and Fig Tree springs are likely to occur within the active life of the mine as a result of drawdown in the regional aquifer.

Impacts to Surface Water Quantity. Ephemeral stream channel stormwater flows contribute significantly to groundwater recharge in arid regions.[14] Stormwater flows also provide seasonally significant surface water contributions to downstream waters. Collectively, in unaltered watersheds, storm flows are a significant source of water contributing to the base flow of downstream receiving waters.[15] The proposed project will result in alteration of the natural surface hydrology through construction of stormwater basins and diversions around the facility to convey and store stormwater originating upgradient of the mine areas. Impacts related to surface water quantity include the modification of stormwater peak flows, modification to overall runoff volume from the watershed, and the direct loss of stock tanks. Runoff reductions will adversely impact water availability for downstream uses. According to the Forest Service, the proposed project will result in a 33.8% reduction in runoff from the project area, reducing surface flow in Davidson Canyon by 5.4%.[16] Reductions in surface water availability in Davidson Canyon will result in adverse effects to riparian vegetation and wildlife use, including endangered, threatened or sensitive aquatic species (e.g., Huachuca water umbel, Gila chub, Gila topminnow, longfin dace, Chiricahua leopard frog, and lowland leopard frog).

The Pima Association of Governments (PAG) has conducted 20 years of hydrologic monitoring along Cienega Creek, including documentation of the relative contribution of surface and groundwater flows from Davidson Canyon to base flows in Cienega Creek.[17] Davidson Canyon, an intermittent stream upstream of its confluence with Cienega Creek, contributes significant flood flows to Cienega Creek during runoff events. Through analysis of water chemistry and stable isotopes, PAG also found that between 8 and 24% of Cienega's perennial base flows are attributable Davidson Canyon's underflow contributions.[18] Any decreases in the surface flows of Davidson Canyon resulting from the mine are therefore likely to significantly reduce contributing base flows to Cienega Creek.

Impacts to Surface Water Quality. Waters within the Cienega Creek watershed support riparian areas and provide natural erosion and sediment control. These waters carry or reduce pollutants and nutrients; therefore the loss of waters can affect water quality. The proposed project will directly affect sediment yield to downstream waters. The project will have permanent surface water quality impacts to 2.5 miles of Barrel Canyon Wash (23 acres) and 14 miles of Davidson Canyon Wash (234 acres), including a

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[11] Ibid.
[12] Ibid.
[13] DEIS, Ch. 3, Table 108.
[14] Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy,M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest.* U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.
[15] Ibid.
[16] DEIS, Ch. 3, Tables 69 and 80.
[17] Pima Association of Governments .2003. *Contribution of Davidson Canyon to Base Flows in Cienega Creek*, 40pp.
[18] Ibid.

reduction of sediment to the downstream reaches of Davidson Canyon Wash of 51.3 percent.[19] The reduction in the delivery of sediment to Davidson Canyon Wash and Cienega Creek have the potential to cause significant geomorphologic changes to downstream washes, resulting in increased channel scour and aggradation, including riparian areas in stream reaches designated as "Outstanding Waters" and CCNP. Aggradation and scour can result in the filling and scouring of pools and riffles used by fish and other aquatic organisms. These changes in channel morphology can also include bank erosion and the loss of riparian vegetation as the channel adjusts to a new sediment, water, and energy equilibrium.

Increased scour will likely result in significant changes to water quality by increasing total suspended sediment in surface water flows. Elevated levels of suspended sediment or moderate-to-high turbidity will likely have significant adverse effects on aquatic organisms in Davidson Canyon Wash and Cienega Creek. Increased suspended sediment and turbidity will have the potential to smother aquatic organisms as sediments settle out. Increases in turbidity can disrupt the feeding, movement, spawning, and rearing of aquatic organisms such as native fish and amphibians; federally listed aquatic species are particularly susceptible to these impacts (*e.g.*, Davidson Canyon's Huachuca water umbel, Gila chub, Gila topminnow, longfin dace, Chiricahua leopard frog, and lowland leopard frog).

Surface water quality may also be adversely impacted by a combination of projected project reductions in surface water quantity and groundwater drawdown. The PAG estimated that Davidson Canyon's relative contribution of base flows in Cienega Creek at Marsh Road between June 2002 and May 2003 ranged from 8-24 percent.[20] Because base flows in Davidson Canyon Wash are lower in dissolved solids, its contribution to Cienega Creek may effectively dilute concentrations of dissolved solids downstream and provide water quality benefits to aquatic species. Significant project related groundwater drawdown is expected to occur in Davidson Canyon, Cienega Creek, Empire Gulch, and Gardner Canyon.[21]

Groundwater drawdown will reduce streamflow, and the surface extent and persistence duration of pools and riffles. Water quality typically decreases as the volume of pools and riffles decrease, including increases in temperature and dissolved solid concentrations, and decrease in dissolved oxygen. These changes can result in increased algal blooms that further reduce the availability of dissolved oxygen. Water quality changes in desiccating pools and riffles can be expected to adversely affect aquatic organisms dependent on these habitats. Native fishes and amphibians such as Gila chub, Gila topminnow, longfin dace, and Chiricahua leopard frog could be expected to see their populations reduced or disappear from declines in water quality where they are known to occur in Davidson Canyon Wash, Cienega Creek, and Empire Gulch.

Impacts Resulting from Groundwater Drawdown. Ephemeral stream channel recharge from stormwater flows contributes significantly to groundwater recharge in arid regions.[22] The projected loss of an estimated 18 miles of stream channel attributable to the proposed project will significantly reduce the groundwater recharge functions within Davidson Canyon. In addition, significant groundwater drawdown will result from excavation of the mining pit.

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[19] DEIS, Ch. 3, Table 87.
[20] Ibid.
[21] DEIS, Ch. 3, Table 100.
[22] Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy,M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest.* U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

The applicant did not analyze adverse effects to Cienega Creek through surface water modifications of its contributing tributaries. However, the applicant did identify several adverse environmental effects to Cienega Creek as a result of the proposed project. Cienega Creek is expected to experience drawdown of 1% to 3% of annual flow after 1,000 years; however, impacts could be much greater during critical periods of low flow (*e.g.*, May-June). During critical times of year, even small flow reductions could cause some portions of Cienega Creek to stop flowing. Although the DEIS states the decrease in groundwater would occur over a long period of time, the reduction in stream flow could impacts aquatic species needing standing or flowing water.[23]

Project groundwater drawdown is also expected to adversely impact 1,364 acres of riparian habitat, representing 29% of the total riparian habitat found within the 145,000-acre project analysis area.[24] This includes secondary impacts to riparian vegetation and wetlands along Cienega Creek (490.4 acres), Davidson Canyon (471.2 acres), Empire Gulch (58.3 acres), and Gardner Canyon (139.6 acres). An unknown, but potentially significant, amount of the total affected riparian acreage is jurisdictional wetlands.[25] Jurisdictional wetlands will most likely occur within areas mapped as hydroriparian and mesoriparian community types. Similarly, groundwater drawdown could be expected to result in the loss of up to 63 springs and associated riparian habitat and wetlands.[26]

Impacts to Reach and Extent of Jurisdictional Waters. Estimates of the extent of waters vary considerably between and within the PN and DEIS. A November 2010 Preliminary Jurisdictional Determination accepted by the Corps states that the entire project area supports 101.6 acres of waters, and the PN suggests 38.6 of these will be filled. However, the reach and extent of jurisdictional waters of the United States have not been formally delineated and may have been underestimated. Pima County has conducted a GIS analysis of the linear and lateral extent of stream channels within the area affected by the Mine Plan of Operations and estimated that over 100 miles of streams and 116 acres of stream channel and floodplain (*i.e.*, <10-yr floodplain) will be affected by the proposed project. The Bureau of Land Management has also expressed concern that riparian wetlands, seeps and springs within Empire Gulch may have been underestimated.[27]

Wetlands and other waters downstream of the project site have also not been delineated (e.g., along Davidson Canyon, Cienega Creek, Empire Gulch, and Gardner Canyon). This is a significant information deficiency because the Forest Service's estimate for secondary impacts to riparian communities along these streams, not including Davidson Canyon Wash, totals approximately 690 acres.[28] Presumably a significant portion of these riparian communities are jurisdictional wetlands, in addition to an unknown acreage of jurisdictional waters that lie below the ordinary high water mark. We are unable to determine the full extent and significance of direct and secondary project impacts in the absence of a complete jurisdictional delineation of all waters potentially impacted by the proposed project.

Other Environmental Considerations. The adverse affects of the project's changes to the regional hydrological regime would be further exacerbated by drought and projected climate change. Long-term ground and surface water monitoring within the Cienega Creek watershed indicates that the duration and extent of streamflow is very susceptible to drought; the length of stream segments that support perennial

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[23] DEIS, Ch. 3, p. 387.
[24] DEIS for the Rosemont Copper Project (11 December 2011), Chapter 3, Tables 98 and 99.
[25] Neither the applicant nor Corps has provided an assessment of jurisdictional wetlands potentially affected by secondary impacts.
[26] DEIS, Ch. 3, Table 108.
[27] U.S. Forest Service, Coronado National Forest, Personal Communication, 2 February 2012.
[28] DEIS, Ch. 3, Table 100.

flow have been reduced beginning with the droughts of the 1980s.[29] In addition, climate change research and modeling predict a 10-20 percent reduction in precipitation in the desert southwest within the next 75 years, resulting in more arid conditions.[30] The potential cumulative effects of drought, aridity from climate change, and projections of reductions in surface water flows and groundwater drawdown attributable to the proposed project will likely result in significant adverse impacts to the aquatic environment.

IV. Aquatic Resources of National Importance

The EPA has determined that Cienega Creek and its major tributary, Davidson Canyon , are aquatic resources of national importance for the purposes of Part IV of the August 1992 Memorandum of Agreement between the EPA and the Department of the Army regarding Section 404(q) of the Clean Water Act. These aquatic resources are extraordinary, rare and intact ecosystems in a desert environment, and their protection is an explicit priority of local, state and federal agencies, environmental organizations, and the public.

The state of Arizona has designated reaches of both Davidson Canyon and Cienega Creek as Outstanding Arizona Waters (OAW) due to, among other factors, their exceptional ecological and recreational significance and the presence of federally threatened or endangered species. As OAW, their water quality meets or exceeds applicable water quality standards. Davidson Canyon Wash is a rare, spring-fed, low elevation desert stream, supporting a variety of uncommon flora and fauna. It flows to Cienega Creek, is the main surface water in a basin flowing in intermittent and perennial reaches to the northwest through the Las Cienegas National Conservation Area and into the Tucson groundwater Active Management Area.[31] Cienega Creek contributes flows to the Santa Cruz River via Pantano Wash, and contains remnants of a historically extensive cienega system, defined by springs and marsh areas supporting habitat for wildlife and plant species, included threatened and endangered species.

In December 2001, Pima County incorporated the Sonoran Desert Conservation Plan into its comprehensive land use plan by establishing the Conservation Lands System as the regional environmental vision. This system classifies lands into a variety of designations to reflect their relative value and importance in maintaining the biological diversity of Pima County. Davidson Canyon is identified under the plan as Biological Core area, and, along with Cienega Creek, an Important Riparian Area. By connecting the Empire, Santa Rita, and Rincon Mountain ranges—a network identified by the Arizona Department of Game and Fish, BLM and Pima County as critical wildlife movement corridor—Davidson Canyon, Cienega Creek and other riparian areas provide a natural habitat mosaic for the wide dispersal and migration of many species (*e.g.*, black bear, mountain lions, bobcats, coyotes).[32]

The upstream tributaries of Cienega Creek, including Davidson Canyon, Empire Gulch and its headwaters, provide a wide range of functions critical to aquatic ecosystem health and stability. These tributaries provide hydrologic connectivity within the watershed, facilitating the movement of water, sediment, nutrients, wildlife, and plant propagules. Ephemeral and intermittent streams are responsible for a large portion of basin ground-water recharge in arid and semi-arid regions through channel

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[29] http://www.pagnet.org/tabid/912/default.aspx
[30] Letter from Pima County to US Army Corps of Engineers, RE: SPL-2008-00816 Rosemont Mine, dated 19 January 2012.
[31] The Tucson Active Management Area was establishment pursuant to the 1980 Groundwater Management Act and is administered by the Arizona Department of Water Resources. The Tucson AMA has a statutory goal of achieving safe-yield by 2025 in order to address long-term implications of groundwater overdraft.
[32] DEIS, Chapter 3, page 370.

infiltration. These ephemeral systems contribute to the biogeochemical functions of waters within their watershed by storing, cycling, transforming, and transporting elements and compounds, while facilitating the movement of sediment and debris and dissipating energy as part of natural fluvial adjustment.[33]

Finally, the national importance of these aquatic resources is underscored by the presence of ten federally-listed threatened or endangered species. These species rely, in whole or in part, on the health and extent of these aquatic resources to ensure their continued existence is not jeopardized. For example, listed fish such as the Gila chub (*Gila intermedia*) is primarily found in deep pools in Cienega Creek and Empire Gulch. Gila topminnow (*Poeciliopsis occidentalis occidentalis*), located in Cienega Creek and Davidson Canyon Wash only tolerates a narrow range of conditions and uses runs, riffles and pools for survival. Avian species such as the Southwestern willow flycatcher (*Empidonax traillii extimus*) nest and forage in associated riparian habitat, while the Mexican spotted owl (*Strix occidentalis lucida*) use these aquatic sites for foraging across its range of isolated mountains and canyons with mixed-conifer, pine-oak and riparian forests. Large mammalian predators, such as the ocelot (*Leopardus pardalis)* and jaguar (*Panthera onca*), depend on these stream corridors as critical movement corridors.

V. Clean Water Act 404(b)(1) Guidelines

The purpose of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of waters of the United States. These goals are achieved, in part, by prohibiting discharges of dredged or fill material that would result in avoidable or significant adverse impacts on the aquatic environment pursuant to EPA's *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA (Guidelines). The burden to demonstrate compliance with the Guidelines rests with applicant for a 404 permit. The Guidelines contain four main, independent requirements that must be met to obtain a permit.

1. Section 230.10(a) prohibits a discharge if there is a less environmentally damaging practicable alternative to the proposed project.
2. Section 230.10(b) prohibits discharges that will result in a violation of water quality standards or toxic effluent standards, jeopardize a threatened or endangered species, or violate requirements imposed to protect a marine sanctuary.
3. Section 230.10(c) prohibits discharges that will cause or contribute to significant degradation of waters. Significant degradation may include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity and stability; and recreational, aesthetic or economic values.
4. Section 230.10(d) prohibits discharges unless all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

[33] See Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy,M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest*. U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

Alternatives Analysis – 40 CFR 230.10(a)

Offsite Alternatives

In evaluating the practicability of offsite alternatives, the Corps directed the applicant to determine availability as the date of acquisition of the Rosemont Project in 2005. Based on a 2005 market entry year, the applicant presented an analysis of copper mining projects that were either underway or in the planning stage at that time. Although eleven offsite alternatives are listed in the AA, insufficient information has been provided in the analysis to eliminate some of the alternatives from further consideration.[34] Information regarding the aquatic resources at the eleven offsite alternatives was not provided. In order to remove offsite alternatives from consideration, additional information, including but not necessarily limited to the following, is needed:

> *Availability* - Several of the offsite alternatives (*e.g.,* Safford, Lone Star, Johnson Camp, Monitor and Markham Wash) were eliminated based on the applicant's following statement, "There was no indication that this facility was for sale in 2005, and it was therefore not available for purchase by Augusta." This statement alone does not substantiate whether these sites may or may not have been "available" under the Guidelines. Additional information is necessary in order to determine whether these alternatives were available at market entry.
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> *Practicability* – The applicant states: "If an offsite alternative consists solely of Mineral Resources, by definition there is insufficient information to determine if extraction is feasible (the industry's term) or practicable (the 404(b)(1) Guidelines' term). It is not until the feasibility study is complete, and the Mineral Reserve identified, that it can be determined whether or not a given project is "capable of being" in light of cost, technology, and logistics." (page 8).

A letter to Westland Resources from Augusta dated August 30, 2010 discussed the history of the Rosemont Deposit. The letter describes the advancement of the Rosemont Project following its purchase in 2005. In particular, when describing the exploration drilling, it states,

> *"At the time of this initial work in 2005 and 2006, it was only appropriate to report on Mineral Resources of the Rosemont Deposit. The estimation of the Mineral Resources and assessment of the reasonable prospects for economic extraction required the judgment of a consulting engineer to serve as the official Qualified Person. In early 2007, the positive results from preliminary assessments of the Rosemont Deposit, allowed for the corporate decision to proceed to the next stage." (page 2)*

In August, 2007, Rosemont Copper Company completed an economic feasibility study for the Rosemont Deposit. Based on this information, it is unclear why other offsite alternatives were eliminated from further consideration for lack of a completed feasibility study by 2005 (market entry). Similar to the Rosemont Deposit, alternatives such as Lone Star, Copper Creek, Monitor, Broad Top Butte, and Peach-Elgin were identified as having mineral resources or were in the exploration phase during 2005. Therefore, these alternatives cannot be removed from further consideration under the Guidelines at this time.[35]

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[34] DEIS Appendix B: *CWA 404(B)(1) Alternatives Analysis Rosemont Copper Project*, September 2011

[35] The AA did not provide information regarding the aquatic resources on each offsite alternative in order to assess the potential environmental impacts associated with constructing a copper mine at these locations.

Onsite Alternatives

The applicant evaluated six onsite alternatives for construction of the proposed copper mine. Several elements of the project are common to all alternatives: production rates, processing facility output, types of equipment, mineral processing operations and techniques, general plant site location, surface water management approach, reclamation and closure and access and utility alignments. With regard to the development of the onsite alternatives, the applicant considered various configurations of the largest project structural elements.

The onsite alternatives are listed in the AA as:

- Alternative 1 – Mine Plan of Operations
- Alternative 2 – Alternative Tailings Sequence
- Alternative 3 – Barrel Canyon Only
- Alternative 4 – Barrel Canyon Only, Landforming
- Alternative 5 – Scholefield Tailings
- Alternative 6 – Modified Pit Configuration.

The PN identifies Alternative 3 (Barrel Canyon Only) as the applicant's proposed project, and all on-site alternatives as practicable except for Alternative 6. The AA lists the Alternative 3 direct impacts at 37.7 acres of waters and ~207 acres of associated riparian habitat. The PN states the proposed project would impact 38.6 acres of waters. Average annual stormwater flows in Barrel Canyon will be reduced by 33.8 percent with 100-years flows reduced by 34.9 percent.

Comparing other alternatives presented in the AA, direct impacts to waters vary from 26.5 acres (Alternative 5 - Scholefield Tailings) to 50.5 acres (Alternative 4 - Barrel Canyon Only, Landforming). Average annual stormwater flow reductions to Davidson Canyon vary among the alternatives from 18.4% (Alternative 5 - Scholefield Tailings) to 45.8 % (Alternative 1 - Mine Plan of Operations). On both metrics, Alternative 5 - Scholefield Tailings has the fewest impacts to aquatic resources, although the AA dismisses it due to the loss of Scholefield Spring, one of the only wetlands identified within the project site. Yet, the Biological Resources section of the DEIS under *Impacts Common To All Action Alternatives* states:

> "Springs would be impacted by surface disturbance and by drawdown in the regional aquifer. Specifically, impacts to Scholefield No. 1 and Fig Tree springs are likely to occur within the active life of the mine as a result of drawdown in the regional aquifer. Riparian vegetation associated with these springs likely would be lost completely; WestLand Resources estimates approximately 0.8 acre of riparian habitat are associated with these springs (WestLand Resources Inc. 2010d)." (DEIS page 388).

The AA goes on to state that under Alternative 5 - Scholefield Tailings, major drainages remaining open would degrade due to adjacent upland mine operations, yet a functional assessment was not conducted on the project site nor qualitatively or quantitatively presented in the AA or DEIS.

The AA also describes power and water utility alignments impacting up to 0.98 acre of waters, dismissing jack-and-bore technology due to cost and potential for greater environmental impacts to vegetated uplands at the staging area. Based on the information provided to date, the applicant has not demonstrated jack-and-bore technology is more environmentally damaging, or that increased costs render the alternative methods impracticable.

To reduce impacts to waters, additional analysis of onsite alternatives should be conducted. This includes, but is not limited to, the construction of higher waste rock piles, and the potential for partial backfill of the mining pit. Impacts to waters from elements common to onsite alternatives have not been broken down. The EPA recommends a delineation of impacts for each element and a description of avoidance and minimization for these elements (*e.g.,* movement of general plant site location, design of surface water management facilities, primary and secondary access).

Compliance with Other Environmental Standards – 40 CFR 230.10(b)

The Guidelines prohibit any discharge of dredged or fill material if it causes or contributes to violations of an applicable state water quality standard. Based on the information currently available, secondary impacts of the proposed fill discharges would result in significant degradation to outstanding natural resource waters in violation of applicable water quality standards (including anti-degradation policies). Reductions in streamflow, alterations in sediment transport, chemical leaching and groundwater drawdown will degrade water quality (*e.g.,* aquatic wildlife (warmwater) designated uses) and the aquatic ecosystem.

Data provided in the Draft EIS show that modeled water quality for untreated seepage from heap leach exceeds standards for cadmium, fluoride, nickel, and selenium. The modeling also shows that after treatment with an engineered biological system, this seepage would be expected to meets standards. Since the effectiveness of the seepage treatment system is a critical factor in determining whether state standards may be violated by the project, the applicant should provide more information on the engineered biological system that was utilized to model compliance. The modeled results in the EIS suggest concentrations of nickel and selenium well below known instrument detection levels or reduction efficiencies, and thus the EPA is skeptical that the reported efficiencies are scientifically supportable, and concerned that proposed treatments may never perform at the levels necessary to ensure that heap leach drain down does not exceed Arizona Aquifer Water Quality Standards.

Placing detention/retention basins on top of tailings or waste rock also represents a threat to water quality. Contrary to the applicant's stated goal of avoiding infiltration from these basins, such placement would promote infiltration by accumulating any appreciable precipitation into one location where overall evaporation rate is slowed. Even lined basins would create an unnecessary long term maintenance issue that would need to be addressed and paid for post closure.

In addition, the EPA is concerned the synthetic precipitation leaching procedure (SPLP)[36] test results presented in the DEIS may significantly understate the potential for seepage waters to exceed Arizona Aquifer Water Quality Standards. Based on SPLP testing methods, the DEIS concludes that

> "None of the constituents predicted in the waste rock seepage exceed current Arizona Aquifer Water Quality Standards. Arsenic is predicted to exceed the proposed lower arsenic standard of 0.010 milligram per liter" (p. 288).

[36] The SPLP (USEPA Method 1312) was developed to evaluate the fate and transport of metals in an engineered land disposal facility from which municipal solid waste is excluded. USGS modified the procedure to be used to measure fraction that controls rapid leaching. This test provides an indication of extent of leaching of salts and readily dissolvable constituents from dried mine materials. Static tests of this nature provided a preliminary simulation of short-term interaction with rain/snowmelt. These tests do not provide any data regarding when acidification may occur or the rates at which acid generation and neutralization reactions will proceed. As such, they are useful only for screening samples for their potential behavior.

In EPA's experience, and based on information at other sites, it is highly likely that the ~2,000 acre waste rock pile will produce seepage in an intermittent manner, highly dependent on annual and/or seasonal precipitation cycles. This will result in relatively small amounts of seepage being exposed to large amounts of potential contaminants, leading to leachates of much higher concentration than predicted by SPLP testing methods. Arsenic is present as a contaminant at numerous hardrock sites in the western US and is likely associated with copper mineralization. Because of its relatively high solubility at neutral pH it is often overlooked when focusing on acid rock drainage, and has frequently resulted in concentrations greater than predicted by SPLP tests at other sites.

With regard to selenium, we note that less than doubling of the predicted concentrations (0.036 mg/L) would result in an exceedance of water quality standards (0.05 mg/L). Given the high liquid:solid dilution ratio employed in the SPLP tests performed for the geochemical characterization, the EPA believes that it is highly likely that any seepage produced from waste rock storage facilities would exceed the Arizona Aquifer Water Quality Standard of 0.05 mg/L for selenium. Selenium has been a particular contaminant of concern at other hardrock mine sites in the U.S., is mobilized under neutral conditions similar to arsenic and can result in significant additional reclamation and groundwater remediation costs.

The EPA recommends the applicant explain how static testing methods like SPLP meet the Arizona Department of Environmental Quality's Best Available Demonstrable Control Technology requirements for characterization of mining waste, when it is generally agreed that kinetic testing is the best predictor of long-term water quality. Kinetic test results might form a stronger basis for this analysis, along with methods such as bottle roll leach tests which use a more appropriate 2:1 liquid-to-solid ratio.

At other regional copper porphyry mines (e.g. Sierrita, Mission), adverse water quality impacts have been observed that were not predicted. In addition to baseline site geochemical characterization, we recommend the applicant evaluate regional geochemical site analogs and explain their expectation that the Rosemont mine will have different acid rock drainage and contaminant leaching potential than similar area copper mines.

In addition to considerations related to sediment discussed earlier, even a potential degradation of water quality from arsenic and selenium not exceeding standards could nevertheless be significant. Davidson Canyon and Cienega Creek are OAW (also referred to as Tier III waters under federal anti degradation policy), a status that prohibits any degradation under the law. Arizona's anti degradation rules reinforce this prohibition.[37] Federal anti degradation requirements provide that "water quality shall be maintained and protected" in Tier III waters, and that the water quality in Tier III waters may not be lowered to accommodate economic or social development in the area where the waters are located.[38]

Permitting the proposed project's reduction in stream flows to Davidson Canyon and Cienega Creek, its alteration of sediment transport, groundwater drawdown, and potential contamination of arsenic and selenium would be inconsistent with applicable anti degradation policy because regulatory authorities would have failed to maintain and protect existing water quality in those OAWs. In addition, such significant degradation of the aquatic ecosystem in Outstanding Natural Resource Waters is prohibited by the Guidelines at 40 CFR 230.10(b)(1) and 40 CFR 230.10(c).

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[37] "[d]egradation of an OAW ... is prohibited." ACC R18-11-107

[38] 40 CFR 131.12(a)

Consistent with Corps regulations and the October 29, 2009 Department of the Army Memorandum regarding Water Quality, the EPA believes the likely impacts to water quality detailed above constitute "other water quality aspects" under 33 CFR 320.4(d) that should be specifically evaluated by the Corps during review of the application. This is particularly important given the potential impacts to OAW, which must be protected from any degradation in water quality.

The Guidelines also state no discharge of dredged or fill material shall be permitted if it jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973. Currently, there is insufficient information to assess the effect of the proposed project on ten federally listed species known to occur within or adjacent to the project site, but potentially significant adverse impacts are reasonably foreseeable. The applicant has not prepared a BA, and thus the USFWS has not yet initiated formal consultation with the USFS to determine the affects of the proposed project on listed species. Therefore, a determination cannot be made whether the project complies with this restriction under the Guidelines.

Significant Degradation – 40 CFR 230.10(c)

Pursuant to the Guidelines, no discharge of dredged or fill material can be permitted which will cause or contribute to significant degradation of waters of the United States. Based on the information currently available and detailed in Section III of this letter, the EPA believes the project, as proposed, will result in significant degradation under the following criteria outlined in regulation:

- Significant adverse effects to water circulation and fluctuation;
- Significant adverse effects to aquatic organisms due to suspended sediments and turbidity;
- Potential arsenic and selenium contamination from seepage waters to downstream waters;
- Significant direct and secondary effects on the structure and function of the aquatic ecosystem and organisms;
- Significant cumulative effects on waters within the 145,000- acre project analysis area;
- Significant secondary effects on the aquatic ecosystem.

Avoidance, Minimization, and Compensation-- 40 CFR 230.10(d)

No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem. For unavoidable impacts that remain, the applicant is required to comply with "Final Rule for Compensatory Mitigation for Losses of Aquatic Resources" (40 CFR Part 230 Subpart J).

Currently, there are no mitigation banks or in-lieu fee programs available to the applicant as compensation for unavoidable impacts to waters. According to the PN, the applicant is evaluating the potential for contiguous offsite Rosemont-owned parcels to offer compensatory mitigation, but no mitigation plan has been submitted. Rosemont anticipates mitigation credit for these parcels will be available through preservation with either a restrictive covenant or conservation easement placed over the mitigation lands. Rosemont is also evaluating offsite parcels within the Santa Cruz River watershed for preservation or restoration of surface water resources. Information provided to date by the applicant is insufficient to demonstrate their mitigation proposal meets the restrictions on discharge required by the guidelines at 40 CFR 230.10(d) and 40 CFR 230.12(a)(3)(iv).

VI. Conclusion

When considered together, the direct and secondary impacts from discharges of dredged or fill material from the proposed project likely will cause or contribute to significant degradation of waters of the United States. The EPA has reached this conclusion based on the information currently available to us from the Corps PN and the Forest Service's DEIS, assessing the factual determinations required under the Guidelines by Subparts B and G, and consideration of Subparts C-F, with special emphasis on the persistence and permanence of the direct and secondary effects outlined in these subparts. Under these Guidelines we have considered individually and collectively the direct and secondary effects from discharges associated with the proposed project to waters of the United States contributing to significant degradation.

The proposed project will likely result in significant adverse effects: (1) to fish, wildlife and special aquatic sites; (2) on life history stages of aquatic life and other wildlife dependent on aquatic ecosystems; and (3) on aquatic ecosystem diversity, productivity, and stability, through the loss of fish and wildlife habitat.[39] This includes significant adverse effects on the physical, chemical, and biological components of the aquatic environment, including the following factual determinations as required under EPA's 404(b)(1) Guidelines.[40]

- *Water circulation and fluctuation determinations.* The proposed project will have significant adverse effects on downstream flows and normal surface and groundwater fluctuations through the direct discharge of fill material and through secondary impacts resulting from groundwater drawdown. The discharge of fill material will divert and obstruct the natural flow patterns of at least 18 miles of stream channel. The discharge of fill material will alter the bottom contours of these 38.6 acres of waters, resulting in significant downstream changes in the hydrology and hydraulics of high functioning receiving waters.

- *Suspended particulate/turbidity determinations.* Secondary effects from increased scour will likely result in significant changes to water quality by increasing total suspended sediment and turbidity in surface water flows. Elevated levels of suspended sediment or moderate-to-high turbidity will likely have significant adverse effects on aquatic organisms in Davidson Canyon and Cienega Creek. Increased suspended sediment and turbidity will have the potential to smother aquatic organisms as sediments settle out. Increases in turbidity can be expected to disrupt the feeding, movement, spawning, and rearing of aquatic organisms such as native fish and amphibians.

- *Contaminant determinations.* Based on our evaluation of the SPLP test results, the EPA believes the proposed project has a high likelihood of potential arsenic and selenium contamination from seepage waters to downstream waters.

- *Aquatic ecosystem and organism determinations.* The proposed discharge will have significant direct and secondary effects on the structure and function of the aquatic ecosystem and organisms. Adverse effects to the life stages of aquatic life and other wildlife dependent on aquatic ecosystems will occur largely through changes associated with the direct fill of 38.6 acres of waters and the potential adverse secondary effects to 1,364 acres of riparian habitat, including jurisdictional wetlands and other aquatic habitats. Secondary effects to high

[39] 40 CFR §230.10(c)(1-3).
[40] 40 CFR §230.11(a-h).

functioning downstream waters will accrue primarily from reductions in surface water flows and the drawdown of groundwater related to excavation of a large mining pit and from the burying of 18 miles of stream channel that normally functions to deliver surface water and recharge groundwater. Groundwater drawdown will result in changes to the downstream water table, thereby negatively affecting water currents, circulation, and fluctuation with negative effects on aquatic organisms such as indigenous fish, amphibians, and riparian wetland species.

- *Determination of cumulative effects on the aquatic ecosystem.* Less than 1 percent of Arizona's landscape is wetland. Since the late 1800's, streams and wetlands throughout Arizona have been modified or drained, resulting in the loss of more than one-third of the State's original wetlands.[41] This project will exacerbate the reasonably foreseeable impacts on aquatic resources contributing to the significant cumulative loss of wetlands in Arizona.

- *Determination of secondary effects on the aquatic ecosystem.* Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of fill material, but do not result from the actual placement of the fill material. The proposed project will have significant adverse secondary impacts primarily to receiving waters. These impacts are related primarily to the reductions in surface flows and groundwater drawdown that result in significant adverse impacts to fish and wildlife dependent on healthy wetlands, streams (including pools and riffle sequences) with sufficient flows, and sanctuaries and refuges, for their survival.

- *Water-related recreation and aesthetics.* The proposed project will impair activities undertaken for amusement and relaxation such as canoeing, sightseeing and hiking, and these impacts will persist for at least a quarter century. The loss of values for consideration includes impairment of natural resources which support recreation activities (*e.g,* degradation of habitat). Aesthetics of the aquatic ecosystem apply to the quality of life enjoyed by the general public and property owners. Loss of value to consider includes creating distracting disposal sites and destroying vital elements that contribute to the compositional harmony or unity, visual distinctiveness, or diversity of an area. The project area is an important location for outdoor recreation. A study conducted by the Sonoran Institute shows that approximately $2.95 billion is spent annually for tourism and outdoor recreational activities in Pima and Santa Cruz Counties. Their analysis states that if the proposed project displaces only one percent of travel and tourism-related spending in the region, the economic loss would be greater than the entire annual payroll of the mine.[42]

Based on the information currently available to the EPA, the proposed discharge does not appear to comply with the substantive requirements in the regulations at 40 CFR 230.10 (a) – (d). The EPA believes that the proposed project will result in significant degradation to waters of the U.S. which constitutes substantial and unacceptable impacts to aquatic resources of national importance, including the "Outstanding Waters" of Davidson Canyon and Cienega Creek.

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[41] http://pubs.usgs.gov/wsp2425/state_highlights_summary.html

[42] J.E. Marlow. 2007. Mining's Potential Economic Impacts in the Santa Rita and Patagonia Mountains Region of Southeastern Arizona. Sonoran Institute Study.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JAN 05 2012

Colonel R. Mark Toy
District Engineer, Los Angeles District
U.S. Army Corps of Engineers
Attn: Regulatory Branch (SPL-2004-01399-MB)
5205 E. Comanche Street
Tucson, Arizona 85707

Subject: Public Notice (PN) 2008-00816-MB for the proposed Rosemont Copper Mine Project, Rosemont Copper Company, Pima County, Arizona

Dear Colonel Toy:

We have reviewed the December 6, 2011 PN describing the proposed Rosemont Copper Mine Project (Rosemont) located 30 miles southeast of Tucson in Pima County, Arizona. According to the PN, the project would eliminate 38.6 acres of waters of the U.S. (waters) tributary to Davidson Canyon and Cienega creek, both designated as "Outstanding Waters" by the state of Arizona. In 2009, EPA worked closely with your staff regarding the ecosystem functions and services in this watershed, and we identified these waters as "aquatic resources of national importance." With the following comments, we reaffirm this resource designation and respectfully identify the Rosemont permit action as a candidate for review by EPA and Corps headquarters.[i]

EPA is concerned that substantial loss and/or degradation of water quality and other aquatic ecosystem functions is likely if this 4,200-acre mine is constructed and operated as proposed, in the upstream tributaries of these rare and protected aquatic resources. The proposed project site supports 101.6 acres of waters, including wetlands, in the Cienega Creek watershed, providing sediment transport and deposition downstream, energy dissipation, groundwater recharge, hydrologic and geochemical connectivity, and biological connectivity to the Santa Cruz River. Davidson Canyon Wash is a rare, spring-fed, low elevation desert stream supporting a variety of rare flora and fauna. Seven federally listed endangered or threatened species occur within or adjacent to the project area to which adverse impacts are reasonably foreseeable.[ii]

Corps regulations prohibit issuance of a 404 permit if it would jeopardize the continued existence of listed species, or result in violation of water quality or toxic effluent standard (40 CFR 230.10(b)). In addition, pursuant to Section 303 of the Clean Water Act (CWA) and regulations at 40 CFR 131.12, the state's "Outstanding Water" designation means both Davidson Canyon Wash and Cienega Creek must be afforded the highest level of protection, and that no degradation of water quality is allowable.

Only discharges meeting all of EPA's 404(b)(1) Guidelines – a series of independent tests at 40 CFR 230 including the analysis of practicable offsite and onsite alternatives – can be permitted by the Corps. The 404 program contributes to the CWA goals to restore and maintain the chemical, physical and biological integrity of the nation's waters by prohibiting discharges of dredged or fill material that would result in avoidable adverse impacts to the aquatic ecosystem (40 CFR 230.10(a)), or the

significant degradation of waters or human health and welfare (e.g., due to groundwater depletion and loss of cultural resources; 40 CFR 230.10(c)). Based on our review of the PN and the alternatives analysis submitted by the applicant, compliance with the 404(b)(1) Guidelines has not been demonstrated. There is presently insufficient information to conclude that the proposed project is the "Least Environmentally Damaging Practicable Alternative" (LEDPA), or meets any of the other restrictions on discharges, including the need to ensure appropriate compensatory mitigation for unavoidable impacts.

As additional information on this project becomes available, please ask your staff to contact Elizabeth Goldmann at (415) 972-3398 to continue our partnership in ensuring CWA compliance. If you would like to discuss this project personally, please call me at (415) 972-3572 or have your Regulatory Division Chief contact Jason Brush, Supervisor of our Wetlands Office, at (415) 972-3483.

Sincerely,

Alexis Strauss 5 Jan. 2012

Alexis Strauss
Director
Water Division

cc: Rosemont Copper Company
USFWS, Phoenix
USFWS, Tucson
M. Fulton, ADEQ
ADGF, Phoenix

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[i] This letter follows field level procedures outlined in the 1992 Memorandum of Agreement between EPA and the Department of the Army, Part IV, paragraph 3(a) regarding section 404(q) of the CWA. EPA Region 9 believes the project as proposed "may result in substantial and unacceptable impacts to aquatic resources of national importance."

[ii] This includes species known to occur in aquatic habitat or use these waters for forage or resting: Chiricahua leopard frog (*Lithobates chiricahuensis*), Mexican spotted owl (*Strix occidentalis lucida*), Southerwester willow flycatcher (*Empidonax traillii extimus*), Lesser long-nosed bat (*Leptonycteris yerbabuenae*), Ocelot (*Leopardus pardalis*), Gila chub (*Gila intermedia*), Gila topminnow (*Poeciliopsis occidentialis occidentalis*), and Jacquar (*Panthera onca*).