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August 15, 2013

Mr. Jim Upchurch
Forest Supervisor
Coronado National Forest
300 W. Congress
Tucson, Arizona 85701

Dear Mr. Upchurch:

The Arizona Game and Fish Department (Department) has reviewed the Preliminary Final Environmental Impact Statement (PFEIS) for the Rosemont Copper Project. The Department is serving as one of the Cooperating Agencies in the preparation of the EIS. We take that role seriously and our comments are intended to highlight areas of potential improvement for the EIS. Our detailed, page-specific comments are provided in the attached table.

Significant elements of the Rosemont Copper Project have been changed since we last reviewed this project in the Draft EIS, making this PFEIS markedly different in some respects than the document we reviewed in January. Reviewing and providing constructive suggestions on a project and document of this size and complexity is a significant challenge. We appreciated the two week extension to the 30 day Cooperator's review. Even with that extension, it was a challenge to provide you with a thorough response. With earlier integration in interdisciplinary coordination, the Department's role would have been more productive and our recommendations and expertise could have better aided the Forest in providing an accurate and thorough product.

The full range of wildlife resources, and the habitats that support them, are resources of concern and need your full attention in this EIS. As you know, the Department believes firmly that the full range of wildlife resources are to be considered state trust species. There are effects to important state trust wildlife resources and habitats from this project, beyond effects to listed species, which need to be disclosed in the Final EIS. We have identified those areas where we believe additional attention is warranted, and offered suggestions to both disclose effects and where possible ameliorate those effects.

The Department notes Rosemont Copper's efforts to comply with federal regulatory requirements to mitigate impacts to federal wildlife trust interests and impacts to waters of the US under Section 404 of the Clean Water Act and under the Endangered Species Act. Although not mandated by federal regulations, the Department always advocates for full mitigation and compensation for effects to state trust wildlife resources. The Department is identified in the

Mitigation and Compensation section of the PFEIS as a potential conservation services provider to address some elements in that plan. That is a role that the Department can play, with the Arizona Game and Fish Commission's concurrence. In order for the Department to assume a conservation service provider role:

- the effects to state trust species must be adequately included and addressed in the mitigation and compensation plan;
- the plan's objectives and its expected conservation outcomes must be sufficiently detailed to ensure that they are achievable and success criteria/expectations can be clearly stated;
- the plan's conservation outcomes must have an explicitly described anticipated lifetime and expectations for maintenance;
- the mitigation and compensation plan must be fully financed to meet the expected conservation outcomes and maintain them for their expected lifetimes – the State of Arizona will not assume financial or other responsibility for meeting federal permit conditions or biological opinion obligations placed on Rosemont Copper, other than as a contractual service provider.

These constitute our comments on the PFEIS as currently written and structured, and augment prior comments and recommendations provided on this project. While we have identified significant recommendations for the PFEIS, we believe that these suggestions can be implemented within a reasonable time frame for finalization of the document. We believe it is possible to meet the expectations of NEPA by accurately disclosing effects, and we believe that it is possible to meet our expectations for mitigating or compensating for effects to wildlife and wildlife habitats affected by the proposed project.

Sincerely,

Larry D. Voyles

LDV:lr

attachment

DOCUMENT REVIEW COMMENT FORM - ARIZONA GAME AND FISH DEPARTMENT

Commenter	Chapter	Section	Page	Line	Comment/Change requested
AGFD	3	Biological Resources	19	1-4	COMMENT: The FEIS inappropriately dismisses the State's role in management and regulation of wildlife, describing regulations as if they merely shadow federal law: "there are other State regulations that are similar to Federal regulations, such as those addressing take of migratory birds (i.e. ARS §17-236); however, requirements of Federal laws are emphasized in this document because this is a Federal action." In the United States and Canada, state, provincial and tribal fish and wildlife agencies are responsible for managing most fish and wildlife on public and private lands and water within their geographic jurisdictions. Federal agencies, *in cooperation with state and tribal agencies*, are responsible for managing only migratory fish and wildlife and federally listed threatened and endangered species, and for regulating wildlife trade. In Arizona, ARS §17-102 codifies state ownership of wildlife: "Wildlife as state property; exceptions. Wildlife, both resident and migratory, native or introduced, found in this state, except fish and bullfrogs impounded in private ponds or tanks or wildlife and birds reared or held in captivity under permit or license from the commission, are property of the state . . ." RECOMMENDATION: The FEIS should accurately describe the State's primary authority to manage and regulate take of wildlife regardless of land status. The FEIS should describe impacts to state trust species, alternatives, and potential mitigation for those impacts. CEQ requires a discussion of the impacts on all natural resources and the conservation potential of various alternatives and mitigation measures. 40 CFR 1502.16(f).

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AGFD	3	Biological Resources	6	22 Note 9	The text states: "It should be noted that wildlife of special concern in Arizona was used in lieu of species of greatest conservation need because the former list was approved by the State Game and Fish Commission, while the latter is in development (i.e. in draft form)." COMMENT: The Department has asked the Forest to use the Department's finalized (USFWS approved and publicly vetted) Arizona State Wildlife Action Plan and the species lists therein. The Department requested the FEIS analyze impacts to wildlife species for which the state has public trust responsibility, specifically those species listed within our State Wildlife Action Plan (SWAP) under Species of Greatest Conservation Need (SCGN) and Species of Economic and Recreational Importance (SERI). Impacts to wildlife on these lists were not evaluated or described and mitigation for those impacts was not considered, developed, or listed in the FEIS. RECOMMENDATION: NEPA requires a full and fair discussion of all environmental impacts. 42 USC 4332(C). The FEIS should contain a discussion of the Department's conservation policies underlying the SWAP. FEIS should include analysis of project impacts to the SGCN and SERI species.
AGFD	3	Biological Resources	35	1	COMMENT: In citing references for Special Status Species, the FEIS fails to consider the State Wildlife Action Plan. Executive Order 13443 requires the Forest to "ensure that agency plans and actions consider programs and recommendations of comprehensive planning efforts such as State Wildlife Action Plans, the North American Waterfowl Management Plan, and other range-wide management plans for big game and upland game birds". The FEIS contains no reference to EO 13443 and neglects to consider the SWAP or adequately describe impacts or mitigation for impacts to many species listed within the State Wildlife Action Plan such as Species of Greatest Conservation Need and Species of Economic and Recreational Importance.

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					RECOMMENDATION: The Department recommends the FEIS recognize Executive Order 13443 and describe impacts to species listed in the SWAP.
AGFD	3	Biological Resources	9	39	The text states: "game species known to occur within the project area are discussed in the biologists' report (SWCA Environmental Consultants 2011b)." COMMENT: This sentence implies that a detailed report on game species occurring in the project area and impacts to those species may be found in the "biologists' report". In fact there is a single paragraph dedicated to game species in this report and it cites a single web page about hunting on the Department's website as its source. RECOMMENDATION: The Department recommends that impacts to Species of Economic and Recreational Importance (SERI) be analyzed and mitigation be identified. We have offered to assist the Forest with this task.
AGFD	3	Biological Resources	8	22	The text states: "Any species or groups listed as management indicator species (MIS) by the Forest Service . . .deemed to potentially occur in areas to be impacted by the proposed project were carried through for detailed evaluation within the management indicator species report" COMMENT: The MIS report does not describe a "detailed evaluation" and does not adequately evaluate the effects to MIS species and, therefore, cannot be relied on as a document informing the FEIS. This 33 page document devotes a single page to each species. Population impacts seem to be evaluated based on percent of habitat affected. Yet, a significance threshold for percent habitat impacted is not given in the report. Thus, the report finds that no species will suffer population impacts whether 1% or 10% of its habitat is affected. Minimal impact is not the same as any impact. Moreover, impacts to MIS species which are not found on any other sensitive species list utilized for the purposes of the EIS were not evaluated on any other criteria. Species of primary importance to the Department such as Gould's Turkey were not considered in the FEIS or the MIS report. The MIS report cites a single (Forest Service) document dating from 1986 in stating that "there are no data" on turkey habitat. This is incorrect and should be corrected in the FEIS.

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					RECOMMENDATION: The Department recommends that impacts to MIS species along with species of importance to the Department (SGCN and SERI) are fully evaluated in the FEIS without relying solely on the MIS report.
AGFD	3	Biological Resources	29, 30	25-28 37 42-45	The text states: "identification of the remaining, fairly intact, intermountain corridors has received much attention" and on line 35-36 "numerous intermountain wildlife movement corridors have been identified as important to the conservation of species and their populations." Line 37 states "When these corridors or linkages were developed, it was assumed that mountain [linkages] . . . would remain intact." Lines 42 through 45 conclude that "Not shown in figure 76 are the intramountain corridors mentioned above (e.g. mountain spine, drainages, and "stepping stone" surface waters and other specialized habitat features); this is why there are no corridors shown in the Santa Rita Mountains themselves." COMMENT: This text describing wildlife movement corridors is well written and supported by the latest science. However, there are no mitigation measures identified that address impacts to these corridors as a result of the mine and mine-related traffic, other than the installation of corrugated metal pipes under the mine's primary access road. RECOMMENDATION: An FEIS must contain a discussion of mitigation measures that would improve the project. 40 C.F.R. 1502.16. The "hard look" standard of NEPA dictates an analysis of the project's impacts on connectivity; alternatives and mitigation to offset those impacts. *Neighbors of Cuddy Mountain v. USFS*, 137 F. 3d 1372 (9th Cir. 1998).
AGFD	3	Biological Resources	31	Table 118	COMMENT: Although referenced in the text, this Table does not recognize intramountain wildlife movement. These islands of habitat are corridors for the many species that prefer the mountains over grasslands or deserts and move north and south. They are especially important for species whose primary, or core habitat is in Mexico, but for which southeast Arizona's sky islands nevertheless contribute to the overall habitat for the species while it remains connected to the core habitat. RECOMMENDATION: The Department recommends updating the table to

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					include intramountain wildlife movement.
AGFD	3	Biological Resources	92, 93	18-29 10-14	COMMENT: The FEIS correctly states that "the project would result in significant fragmentation of mountain habitat" compared to the existing condition. This project area is high quality habitat that functions as the hub of a number of corridors which radiate out to other sky islands like the spokes of a wheel. Page 93 correctly states that wildlife movement "throughout the area would be ***severely compromised for some species"*** yet in the Mitigation Effectiveness section little to no mitigation for wildlife movement impacts have been identified as required under NEPA. RECOMMENDATION: The Department recommends that previously identified mitigation measures be described to address the impacts to wildlife connectivity at modeled wildlife linkages fragmented by highways and across the project area.
AGFD	3	Biological Resources	71	29	COMMENT: The Forest should note that no information on actual use of modeled corridors between the Catalinas and Whetstones currently exists.
AGFD	3	Biological Resources	15	Table 116	COMMENT: Some species are sensitive to the constant presence of human activity and will avoid the area. This impact is not included in the table.
AGFD	3	Biological Resources	98	Table 123	COMMENT: Jaguars are missing from the list of mammals affected. RECOMMENDATION: The Department recommends adding jaguars to the list of mammals affected.
AGFD	3	Biological Resources	65	29	The text states: "There is evidence to suggest that all the ocelots photographed in the Huachuca Mountains were the same individual". COMMENT: This sentence is wrong or out of date. The Department has positively confirmed that there are at least two different ocelot individuals in the Huachucas. RECOMMENDATION: The Department suggests updating the text.

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AGFD	3	Biological Resources	79	7	COMMENT: The FEIS fails to adequately address or analyze the interaction of multiple impacts on species. While individually, each analyzed impact may not have a significant effect on any species, adding all of them together may reduce the suitability of the area for occupation by certain species; especially those that are rare, secretive and do not tolerate human activity, rely on high ecosystem integrity, or are dependent on large blocks of fragmented habitat. For instance, this section addresses impacts from dust, noise, vibration, and artificial lighting. These impacts could collectively be called "disturbance", but there is not an adequate analysis of the effects of multiple mine-related "disturbances" that may cause an animal to avoid the area, what impact that avoidance may have on the population as a whole, and what impact that population impact may have on the species. This is not beyond the scope of the FEIS and per CEQ guidance on the topic should be addressed. The CEQ guidance states that "evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time." (Appendix F, CEQ Guidance, Cumulative Effects) RECOMMENDATION: The Department recommends a description of the impacts and interaction of multiple "disturbances" from mining activities coupled with other environmental stressors on the wildlife populations.
AGFD	3	Biological Resources	89 90	15-44 1-11	The text describes how the water quality in the mine pit lake could exceed standards for cadmium, lead, copper, mercury, selenium, ammonia and zinc at levels toxic to invertebrates and birds. The FEIS section on Groundwater Quality notes that the pit lake may also be acidic. The FEIS does not describe any mitigation measures for the mine pit lake. CEQ requires a discussion of mitigation measures, even if the mitigation is beyond the authority of the federal agency to implement. An analog site is the Berkeley Pit, an acidic and metalliferous pit lake that formed at former open pit copper mine in Butte, Montana. RECOMMENDATION: The FEIS should further note that birds may perish in the mine pit lake due to exposure to these constituents in violation of the

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					Migratory Bird Treaty Act. The FEIS should discuss the potential treatment options of the Rosemont Mine pit lake following closure of mine to reduce or eliminate adverse impacts to wildlife.
AGFD	3	Biological Resources	136	26-30	COMMENT: The FEIS describes a concern regarding the loss of habitat connectivity between the Santa Rita and Whetstone Mountains due to Rosemont Mine-related traffic. The mine will place 455 mine trucks a week on State Route 83. This increase in traffic, coupled with employee traffic, will occur 24 hours a day, 7 days a week and will impede wildlife access. The FEIS requires RCC to fund a camera study to make a recommendation for a suitable crossing structure but does not recommend measures that will remediate the loss of connectivity such as crossing structures. The FEIS does not require RCC to address any adaptive needs that may be identified as a result of information obtained through these camera studies. RECOMMENDATION: As there is limited data on the movement patterns of species in the vicinity of the Rosemont Copper project, the Department recommends a comprehensive study tracking the movement of wildlife species such as mountain lions, deer and javelina using satellite transmitter-collared animals. The cost of such a project is approximately $285,000. A camera study would be less effective, but a well-designed camera-only study would cost approximately $175,000. A full discussion of mitigation measures that could be used to address findings from such a study should be included in the FEIS.
AGFD	3	Biological Resources	95	27	COMMENT: Stating that roads have a positive impact on birds is misleading. Fragmentation of habitat may increase species diversity as species reliant upon fragmentation would benefit. However, those opportunistic species are typically not the species of concern. RECOMMENDATION: The Department recommends removing this statement and adding a discussion of the impacts to bird species that might be negatively affected by increased fragmentation.
AGFD	3	Biological	95	42-45	The text states: "Any special status animals present in the project area or in the

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		Resources			path of the connected actions could be lost (i.e. crushed, trampled, etc.) or otherwise harmed (i.e., forced to relocate, cut off from other individuals, foraging success decreased, etc.) as a result of project activities. Additionally, an increase in vehicle and construction equipment traffic into and within the analysis area would occur during the premining phase, and increased travel associated with day-to-day operations and maintenance activities would occur through closure and could result in direct (animals could be injured or lost) and indirect impacts to special status species. COMMENT: This paragraph describes the potential for direct and indirect take of Federal special status species but fails to account for loss of state trust species even though such take is identified as an adverse impact. RECOMMENDATION: The Department recommends that the FEIS address how RCC will avoid, minimize and mitigate taking wildlife protected under Arizona Revised Statutes Title 17.
AGFD	3	Biological Resources	30; 33; 53	5,6 Table 118	COMMENT: Loss of riparian habitat impact on SGCN birds is not adequately described and inadequate mitigation is offered. The FEIS does not adequately evaluate the impacts to migratory and non-migratory birds from the direct loss of established native riparian woodlands in the project area or those potentially lost due to mine-related groundwater drawdown in Empire Gulch, Davidson Canyon and possibly Cienega Creek. Mitigation of these impacts is likewise not adequately addressed, particularly for species not on federal lists. This habitat, consisting of cottonwood, willow and mesquite is not only important to many breeding birds, including Species of Greatest Conservation Need (SGCN) in southern Arizona, but to 250+ migratory species that pass through and/or winter annually in this habitat. Although the limitations and inadequacies of modeling groundwater drawdown are described, the document does not adequately address a scenario where the best modeling nonetheless inaccurately predicts events in the real world, greater drawdown occurs, and riparian habitat is affected. If monitoring detects greater drawdown than predicted, no mitigation measures are described that will effectively ameliorate

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					that potentiality. Larger and more continuous riparian habitat is of far greater value to a larger suite of species than are several smaller patches of habitat. The FEIS does not adequately describe the degradation of the greater riparian ecosystem due to impacts to parts of it. The FEIS does not adequately address cumulative effects of potential groundwater drawdown combined with climate change. Climate scientists in the Southwest predict a hotter and drier climate here in the near future. The cumulative impacts of drawdown, less runoff, interrupted runoff, and greater evaporation have not been adequately addressed in relation to riparian bird habitat which may be significantly diminished. RECOMMENDATION: The Department recommends that impacts to riparian habitat and SGCN species, including migratory species, and mitigation actions to address those impacts be fully described in the FEIS as required under NEPA. The uncertainties concerning the extent of groundwater drawdown and its effect on riparian habitats does not relieve the Forest of the responsibility under NEPA to discuss the mitigation of likely impacts at the outset. *South Fork Band Council v. U.S. Department of the Interior*, 588 F. 3d 718 (9th Cir, 2009).
AGFD	3	Biological Resources	137	17	COMMENT: There are no measures to compensate for the loss of yellow-billed cuckoo or other nesting bird habitat. ARS § 17-236 prohibits the take or injury of any bird, the harassment of any bird upon its nest, or removal of nests or eggs except as may occur in normal horticultural and agricultural practices and except as authorized by Commission order. RECOMMENDATION: The Department recommends that RCC develop an avian conservation plan in consultation with the Arizona Game and Fish Department to be authorized by the Arizona Game and Fish Commission.
AGFD	3	Biological Resources Seeps, Springs,	110-111 33	10-42	COMMENT: In Seeps, Springs, and Riparian areas, page 33, lines 16 through 20, “all three groundwater flow models predict changes in groundwater levels in the vicinity of the Upper Empire Gulch Springs” and line 33 “these model results

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		Riparian			suggest that several feet of drawdown could potentially occur in Empire Gulch in the long term" and on page 34, lines 28-31 "small changes in groundwater level or flow, even if dwarfed by the natural background variability, have an additive effect that could impact riparian vegetation or aquatic species. . . This possibility was disclosed in the DEIS and remains valid." RECOMMENDATION: The Department recommends that the FEIS should describe the long-term impacts to aquatic and riparian species in Upper Empire Gulch Springs due to potential drawdown.
AGFD	3	Seeps, Springs, Riparian	29, 34		COMMENT: The FEIS does not clearly address additive effects of loss of water in the watershed on Cienega Creek. In addressing the effects of groundwater drawdown on Cienega Creek, this section acknowledges that all models predict drawdown of Empire Gulch, and that loss of water throughout the watershed resulting from the mine pit dewatering "have an additive effect that could impact riparian vegetation or aquatic species" and that "this possibility was disclosed in the DEIS and remains valid (page 34 line 28-31.") However, the summary on page 34, line 42 states "there is no reasonable analysis to indicate that the stream flow in Cienega Creek would be impacted by groundwater drawdown caused by mine pit dewatering." This is contradictory and seems designed to confuse the reader into thinking that Cienega Creek will not be impacted (under "any reasonable analysis") when in fact the analysis shows that the additive impacts "*have an additive effect.*" RECOMMENDATION: The Department recommends that this section be expanded and clarified.
AGFD	3	Biological Resources	111 112	39-44 1-12	COMMENT: The FEIS describes impacts to two talussnail species but does not describe mitigation measures for those impacts. Impacts from the mine are expected to result in direct and indirect take of tallussnails and this should be clearly stated in the FEIS. RECOMMENDATION: The Department recommends that the FEIS should require Rosemont to develop and finalize a Conservation Agreement with annual

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					monitoring of a subset of talus habitats/snail populations in the vicinity of the mine. This could be done in the context of a larger wildlife conservation plan for state species. Another component of the mitigation plan should preserve habitats in the proximity of the mine and any that can feasibly be saved within the mine's footprint.
AGFD	3	Biological Resources	117 118	11-42 1-7	COMMENT: The FEIS lacks all reference to any wildlife conservation or mitigation measures for non-migratory bird species even though all bird species are protected under state law. This section addresses migratory birds and the Migratory Bird Treaty Act while failing to address State law prohibiting take and harassment of birds or nests. ARS §17-236 prohibits the take or injury of <u>any bird</u>, the harassment of any bird upon its nest, or removal of nests or eggs except as may occur in normal horticultural and agricultural practices and except as authorized by Commission order. ARS §17-236 is not a state law for the purpose of shadowing federal law; it has greater breadth than federal law and applies to all species, not just migratory species. The Department recommends that RCC coordinates with the Department to develop an Avian Protection Plan which may be part of a larger Wildlife Conservation Plan mitigating for state trust species. RECOMMENDATION: The Department made similar comments to the DEIS. Impacts to and mitigation for State trust avian species have not been described in the FEIS.
AGFD	3	Biological Resources	133	40-45	The text states: "Rosemont Copper has committed to enhancing or replacing up to 30 water sources to offset potential impacts to surface waters, and the performance and success of these waters would be monitored as well." COMMENT: This mitigation is vague and effectiveness cannot be determined.t No funding amount has been identified. Seeps and springs will be replaced by "constructed waters". The Forest has stated that it is concerned that too many waters may be constructed within the Rosemont Allotments. The entire

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					Coronado Forest should be considered for replacement waters, not just the Rosemont Allotments. The FEIS should require the constructed waters to replace or enhance waters in kind for what is directly or indirectly impacted. For instance, a spring providing habitat for aquatic species and creating a riparian area with obligate associated vegetation should not be replaced with a rainwater catchment that provides only drinking water. There are opportunities forest-wide to restore and enhance springs that have been severely degraded. Mitigation Measure FS-BR-05 states that Rosemont is to establish a long-term management and maintenance fund to maintain the constructed water features. No other details, such as the amount of funding or the period of time the waters are to be funded for management, is described. If the Forest commits to mitigation measures, it has a duty to ensure the measure can be implemented and will be effective. No discussion of the effectiveness of this "fund" is described in the FEIS. *South Fork Band Council v. U.S. Department of the Interior,* 588 F. 3d 718 (9th Cir. 2009). RECOMMENDATION: The Department recommends that the FEIS clearly states that the 30 waters be replaced and enhanced with in-kind or greater habitat values over the entire Coronado National Forest. The length of time that funding will be available for management and the amount of that funding should be clearly stated.
AGFD	3	Biological Resources	135	13-27	COMMENT: The wording of this measure for the construction and maintenance of water features includes the modifiers "as needed" and "if needed." As written, this measure does not meet CEQ guidelines for mitigation effectiveness, especially since the Department asserts that the mitigation measure *is needed.* As primary lead for implementing CLF recovery efforts, the Department asserts that all 30 waters *are needed*. There should be no question that new and enhanced waters are needed for many species of wildlife and especially for the Chiricahua leopard frog. The FEIS appears to be limiting the placement of new and enhanced waters to the Rosemont grazing allotments. The Rosemont allotments have no biological relevance to the needs of wildlife. The Chiricahua leopard frog's range was historically throughout most of the Coronado National Forest and the Department is aware of more than 30 locations that require

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					additional waters or enhanced waters for this species alone. RECOMMENDATION: The Department recommends that the FEIS should require the development and long-term maintenance of all 30 water features and requests involvement in determining what sites will be constructed, enhanced, managed, etc. and how the funding for such work will be calculated. The Department suggests the FEIS describe: How much money will go into the long-term management fund and who will manage those funds; what types of projects are planned or anticipated, and how Rosemont will ensure that the development of these projects is linked to high priority actions for target taxa.
AGFD	3	Biological Resources	134	33-36	COMMENT: Unless the water ponds in the project area become an attractive nuisance, it is unclear how this measure benefits CLF to any great degree. RECOMMENDATION: The Department recommends clarifying this statement.
AGFD	3	Biological Resources	104	41-42	COMMENT: Correction: AGFD has confirmed the presence of chytridiomycosis in the Santa Rita Mountains. RECOMMENDATION: The Department recommends adding this finding to the FEIS.
AGFD	3	Biological Resources	135-136	45-47, 1-25	COMMENT: Without a well-designed, well-funded, and efficiently executed plan to eliminate bullfrogs and other nonnatives from the Sonoita Creek watershed this measure likely would not benefit CLF or other aquatic organisms. RECOMMENDATION: The Department recommends developing a plan eliminate nonnatives from the Sonoita Creek Watershed and identify the funding to implement that plan.
AGFD	3	Biological Resources	136	37-47	COMMENT: The Department has not had an opportunity to review and comment on the Rosemont preliminary invasive species management plan and as such cannot comment on whether or not it can be supported and executed in a manner to have its intended effect. RECOMMENDATION: As primary implementers of CLF recovery and management efforts, and having statutory authority over invasive wildlife

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					management and sportfish management, the Department recommends that the Forest allow the Department to provide necessary input before determining the effectiveness of this mitigation measure requiring Department authorizations.
AGFD	3	Biological Resources	137	1-5	COMMENT: The FEIS does not define "immediate vicinity of the project area." This measure might not have any benefit for CLF. There are sites within the vicinity (e.g., Greaterville area) that currently support CLF. RECOMMENDATION: The Department recommends the Forest clarify which sites may require removal and relocation of CLF. Additionally, the Department recommends that the FEIS specify that the Forest will coordinate with FWS and the Department on any movement of frogs.
AGFD	3	Biological Resources	137-138	44-47 1-16	COMMENT: This measure to modify allotment management plans could also benefit CLF, if pastures with existing or new CLF populations are included and allowed to rest from grazing. RECOMMENDATION: The Department suggests adding benefits to CLF to the FEIS.
AGFD	3	Biological Resources	139	13-16	COMMENT: The value of annual monitoring for Chiricahua leopard frog will depend on who leads this effort, where it is focused, when monitoring occurs, etc. RECOMMENDATION: The Department recommends that the FEIS identify the AGFD as the logical choice for this effort and identify funding for this effort.
AGFD	3	Biological Resources	134,135	45, 1-25	COMMENT: The FEIS does not impose any funding commitment upon Rosemont to implement Conservation measures called for at Sonoita Creek Ranch (SCR), or to fund the maintenance of SCR in perpetuity for connectivity for federally-listed species. The FEIS states that "costs associated with initiating an ILF project at Sonoita Creek Ranch would be included in the costs calculated by the ILF sponsor while determining the cost per mitigation credit. This mitigation would partially compensate for impacts to wildlife habitat and habitat connectivity, including jaguar, ocelot, Mexican spotted owl, lesser long-nosed bat, Gila chub, Gila

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					topminnow, Chiricahua leopard frog, western yellow-billed cuckoo, and Huachuca water umbel." Conservation and management of federally-listed species cannot be funded through funding of ILF mitigation credits for losses to Waters of the United States. Stating that ILF mitigation requirements will "partially" compensate for impacts to wildlife and habitat is contrary to ACOE ILF regulations. RECOMMENDATION: The FEIS should clearly state how Rosemont will fund ESA conservation measures and how those measures will mitigate for impacts to wildlife and habitat.
AGFD	3	Biological Resources	137 116	6 31-43	COMMENT: The project has the potential to take species of bats protected under state law but only addresses species protected under federal law. The FEIS does not identify how the proponent will avoid take of state jurisdiction species of bats. The FEIS prescribes mitigation and monitoring for lesser long-nosed bats but does not describe impacts nor recommend mitigation or monitoring for the other species of bat which may occur at the mine site and/or be impacted by the project, including arizona myotis; cave myotis; greater western mastiff bat; Mexican free-tailed bat; pale townsend's big-eared bat; spotted bat; western red bat; western yellow bat and Yuma myotis. If the proponent becomes aware of roosts occupied by bats on the project site they must develop a plan to protect those roosts from disturbance and if any roosts must be destroyed the Department requests the proponent compensate the Department for those roosts to provide for no net loss of bat habitat. The Department has suggested to Rosemont, the Forest, and to the U.S. Fish and Wildlife Service that protection of the Montezuma mine near the Department's Coalmine Property would provide some mitigation for loss of roost habitat for lesser long-nosed bats. This option has not been considered in the FEIS. RECOMMENDATION: The Department suggests that the FEIS identify the Montezuma mine as potential off-site mitigation for loss of roost habitat. The FEIS must describe potential impacts to state trust species and identify potential mitigation for those impacts.

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					The FEIS must describe a plan for avoidance of take of bat species protected under state law that have the potential to be taken by construction or operational activities of the mine.
AGFD	3	Biological Resources	9	5	COMMENT: The survey for bats within the project area relied on "sampling" an area for bat presence and extrapolating to the rest of the project footprint. This is survey methodology may result in impacts not being adequately described or mitigated. A roost serving thousands of bats may not show up on a small sample area. Should that one roost be missed, those bats will be impacted. Important maternity sites that will be impacted may not have been identified and mitigation has not been considered. RECOMMENDATION: The Department recommends the FEIS require a comprehensive survey of the project area to identify potential impacts to all species of bats which may be found in the area.
AGFD	3	Biological Resources	137	6	COMMENT: For the one roost the Forest knows about for LLNB, the FEIS requires work outside the roosting season and closure of the site to exclude LLNB, but the possibility of maternity roosting of state trust bat species, which may also be using that roost, is not discussed or analyzed. Due to different seasonal use of the roost by different species, this could result in the take of state trust species. RECOMMENDATION: The Department recommends that the FEIS identify use by all bat species and that all bat species be considered when identifying impacts and mitigation, not just federally listed species.
AGFD	3	Biological Resources	137 138	44-47 1-16	COMMENT: The Department commends the Forest for finding ways to improve grazing management, however the Department believes the Forest should be managing grazing in the best way possible for the health of the range and wildlife habitat without respect to the impacts of the mine. Inclusion of the measure in the FEIS could have the effect of calling into question the effects of grazing throughout the range of the bat. RECOMMENDATION: If the Forest believes the current grazing regime is detrimental to the lesser long-nosed bat population, the Forest should consider those impacts regardless of the Rosemont Mine's impact on the bat. This

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					consideration should not be a mitigation measure for the purposes of the mine and should not be limited to the Rosemont allotments. If the Forest does not believe the current grazing regime negatively impacts the bat, the mitigation measure should not be included because the measure would have no effect.
AGFD	3	Biological Resources	138	17-32	COMMENT: The Forest will conduct predisturbance surveys for Forest Service Sensitive Species surveys for only 11 species. The FEIS did not consider the species listed in the State Wildlife Action Plan. RECOMMENDATION: The FEIS should describe impacts to State trust species and identify mitigation for those impacts.
AGFD	3	Seeps, Springs	1-2	41-43, 1-6	The text states: "it is unlikely that the water table [of the Santa Cruz Basin] will recover to the point that it would support riparian or spring resources. Therefore, this analysis remains absent from the FEIS." COMMENT: Even if water table recovery is unlikely, further groundwater withdrawal for the mine is additive to the existing withdrawal and must be considered as a cumulative effect under the NEPA. RECOMMENDATION: The FEIS should discuss pumping from the Santa Cruz Basin in the cumulative effects section.
AGFD	3	Biological Resources	137	27-43	COMMENT: The Cienega Creek Watershed Conservation Fund is grossly underfunded for the various purposes described in the FEIS. RECOMMENDATION: The Department recommends the FEIS clearly identify commitments of the Fund to benefit wildlife and its habitat, and design those commitments to achieve environmentally preferred outcomes rather than suggest a laundry list of possibilities for the Fund in the FEIS. These commitments should be carefully specified in terms of measureable performance standards or expected results, so as to establish clear performance expectations. The FEIS should estimate costs, and costs should match funding described for implementation of the measure. The Forest should specify the timeframe for the actions committed for the fund.
AGFD	3	Biological	133	23-39	COMMENT: The sever and transfer of portions of water rights "to appropriate

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		Resources			entities" for in-stream flow rights on Upper Cienega Creek assumes a land interest by the "appropriate entity" and transfer of those water rights to that entity. RECOMMENDATION: The FEIS should not rely on this mitigation, given the uncertainties over its implementation.
AGFD	3	Recreation and Wilderness	21	14	COMMENT: The public will lose access to almost 7000 acres, or roughly 11 square miles, of their national forest lands for up to 30 years. The Arizona Game and Fish Department has asked that this recreational opportunity be replaced at 100% level in-kind, in-time since the beginning of our coordination on the project. The FEIS does not identify any mitigation for loss of these 11 square miles of recreational opportunities. The Department has provided numerous suggestions for how Rosemont Copper might fund purchase of access to currently inaccessible lands. Additionally, some of the mitigation identified might also be applied to mitigation for access. RECOMMENDATION: The FEIS should describe how loss of public access resulting from the project may be mitigated.
AGFD	3	Recreation and Wilderness	21	4-8	The text states: "These actions may reduce birding opportunities in the area directly surrounding the project area for all action alternatives. However, direct and indirect impacts to birds are expected to decrease with distance from the project" COMMENT: This paragraph does not state that 11 square miles of public lands will no longer be available to birders. No mitigation is offered for new birding opportunities and economic losses due to loss of birding opportunities are not calculated. RECOMMENDATION: The FEIS should identify the impact of the loss of access to birders and how this loss of an important recreational and economically important activity could be mitigated.
AGFD	2	Alternatives	5-6		The Department commends Rosemont Copper Company and the Forest Supervisor for the joint decision to remove the heap leach process and heap leach facilities from the Forest Service-preferred Barrel Alternative. The Department

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					had submitted several DEIS comments expressing concerns over impacts to surface and groundwater quality and wildlife of uncontrolled long-term acidic heap leachate generation from the minesite. This decision will result in a more environmentally protective mining operation.
AGFD	3	Surface water quality		7-19	The text and Table 105 reflects that selenium concentrations in stormwater discharges from the waste rock facility show selenium in excess of the surface water quality standard of 0.033 milligram per liter in Barrel Canyon based on synthetic precipitate leaching procedure testing, designed to simulate the exposure of waste rock types to slightly acidic rainwater. The text further notes that whether stormwater would actually be exposed to these waste rock types would not be fully known until operations begin. COMMENT: Approximately 1.2 billion tons of waste rock will be disposed in the Waste Rock Storage area over the life of the mine. The Department endorses and supports the rigorous monitoring program described in the FEIS for mine-related releases in seepage and stormwater. *See* Comments below.
AGFD	3	Seeps Springs	44	14-40	The text state that if ADEQ issues a CWA 401 certification to Rosemont certifying that the permitted activity will not violate state surface water quality standards, that "ADEQ by definition is determining that Outstanding Arizona Waters will not be degraded". COMMENT: A.A.C.R. 18-107.01(C)(4) Tier 3 anti-degradation protection standards states that a discharge regulated under a §404 permit that may affect existing water quality of an OAW requires an individual §401 water quality certification to ensure that existing water quality is maintained and protected and that any water quality impacts are temporary (six months or less). The only way to determine whether the mine will have an effect on the water quality of the OAWs is through regular monitoring of surface water quality in the downstream watershed during the mine life, closure and post-closure. According to the *Integrated Watershed Summary* (The Rosemont Project, June 2012) Rosemont Copper Company, at ADEQ's request voluntarily developed a

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					water monitoring plan to implement surface water quality monitoring at springs throughout Davidson Canyon and surface and groundwater monitoring throughout Davidson Canyon and in Cienega Creek. Full implementation of the plan is dependent on the cooperation of landowners (State, Pima County, private). The Department supports this surface water quality monitoring plan. Surface water quality monitoring on a regular basis will determine potential water quality impacts on OAWs and aquatic organisms, including the endangered Gila Chub.
AGFD	3	Surface Water Quality	25 33		AGFD repeats its DEIS Comment concern that the FEIS text does not describe potential adverse consequences to Outstanding Arizona waters of Davidson Canyon and Cienega Creek, their riparian resources and aquatic organisms, if stormwater discharges from the minesite breach or destroy the compliance point check dam. The Rosemont AZPDES Stormwater Multi-Sector General Permit permits the off-site discharge of stormwater that has not been in contact with mining operations and mine site materials. The text describes how stormwater leaving the site will be impounded and tested for constituents of concern. The compliance point dam is the final temporary impoundment pond located at the outlet of Barrel Canyon. The location for the compliance point dam was chosen because it is the downgradient edge of the collective drainages associated with mine project activities. The dam would be approximately 6 feet tall, designed as a porous, flow-through sediment pond with a capacity of 2 acre-feet. It is to be constructed using inert or acid-neutralizing waste rock and is to be the last point of detention in the series of stormwater controls and a point for surface water flows to be monitored and tested for chemical and sediment content in accordance with the Rosemont AZPDES permit prior to release into the Barrel Canyon channel. Stormwater is to temporarily impounded behind the dam during storm events and then slowly released downstream through the porous rock-fill embankment. The dam will also allow the settling and reduction of suspended sediments before the

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					impounded stormwater is discharged downstream. COMMENT: According to the *Integrated Watershed Summary*, the water quality monitoring plan developed by Rosemont Copper Company at the request of ADEQ will install monitoring stations to characterize water quality for runoff generated from watershed areas upstream and downstream of the mine site throughout Barrel Canyon, between Barrel Canyon and the OAW segment in Davidson Canyon, and in the Davidson Canyon and Cienega Creek OAW segments. Water quality analyses are to be performed on samples obtained from each runoff event in the watershed. As the FEIS notes in Table 97 on page 4, runoff from the mine would affect 2.5 miles of Barrel Canyon and 14 miles of Davidson Canyon (no mention is made of Cienega Creek). The AZPDES General Permit for Stormwater Discharges for the Rosemont Mine does not automatically require Rosemont to submit a SWPPP that includes a sampling and analysis plan for OAWs in Davidson Canyon and Lower Cienega Creek because the OAWs are more than 2.5 miles distant from the minesite. AZPDES Permit at Section 1.1.4.6.2.c. RECOMMENDATION: The Department strongly supports a testing program for water quality in both the Davidson Canyon and Cienega Creek OAW, either in the SWPPP to be prepared by Rosemont Mine, and/or CNF review and adopt a water quality sampling plan for the OAWs in Mitigation FS-SW-01 (Surface Water Quantity and Quality).
AGFD	3	Surface Water Quality	1 33	30-37 7-9	The text states: "Construction and operation of tailings, waste rock, and leach facilities have the potential to result in sediment or other pollutants reaching surface water and degrading water quality, leading to a loss of beneficial uses. If sediment enters streams, turbidity will increase, and State water quality standards could be exceeded. Downstream segments of Davidson Canyon and Cienega Creek are Outstanding Arizona Waters (Tier 3), which are given the highest level of antidegradation protection. As outstanding resource waters under the ARS, Tier 3 waters must be maintained and protected, with no degradation in water quality allowed." The FEIS does not fully describe the impacts of sediments and other pollutants

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					from the mine site on downstream watersheds. The Rosemont *Aquifer Protection Permit Application*, Volume 1 (Tetra Tech, February 2009), Table 5.02 on page 33 contains a summary of rainfall run-off flow and volume reporting to the compliance point dam for six scenarios, from baseline to year 19 of mine operations. According to the Table, at baseline 468 AF of rainfall reports to the compliance point dam during a 2-year, 24-hour rain event; a 100-year, 24-hour storm results in 1,419 AF at the dam. From Year 0 to Year 19 of mine operations, a 2-year, 24-hour storm event will report from 406 AF to 229 AF to the dam; a 100-year, 24-hour event will report water volumes of 1,258 to 839 AF to the dam. The FEIS text states that "[t]he design of the compliance point dam is such that large flows are expected to overtop and occasionally destroy the dam. If the dam were damaged by a storm event, it would be repaired and rebuilt as necessary". The dam has a capacity of only 2 AF; the FEIS text is not specific in calculating the estimated AF of stormwater that can be anticipated to overtop or destroy the dam. Under either scenario, the potential exists for stormwater that has been in contact with ore bodies and mine processing facilities to be discharged off-site in violation of the AZPDES permit, and without chemical constituent testing or sediment settling. It is also unclear whether Rosemont has analyzed the frequency of events that would destroy the dam, and what portion of the time the dam would be out of service. RECOMMENDATION: The FEIS should describe the potential effects of unregulated contact stormwater runoff from the overtopped or destroyed compliance dam to surface water quality of downstream Outstanding Arizona Waters, including contaminants of concern and total suspended solids. The text should discuss the size of storms and estimated AF reporting to the dam that can be projected to overtop or destroy it. This discussion should be reflected in Chapter 3, Seeps, Springs, and Riparian Areas, Page 41 under "Effect on Outstanding Arizona Waters" and Table 111 on Page 42.

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AGFD	3	Surface Water Quality	33	9-14	The text states that "[b]ecause the compliance point dam would be constructed of inert rock, has a small capacity, would be rebuilt, and is not considered a dam under the jurisdiction of dam safety regulations, any possible effects of the dam's being destroyed are considered insignificant". COMMENT: This statement was the subject of an AGFD DEIS comment that the destruction of the compliance dam is not an 'insignificant event." The FEIS repeats the DEIS statement that the loss of the dam is "insignificant". The destruction of the dam during storm events removes the last stormwater and sediment control structure before stormwater discharges to the downstream watershed and into the surface waters of Davidson Canyon and Cienega Creek. AGFD notes that Rosemont has yet to submit a stormwater pollution protection plan to ADEQ. RECOMMENDATION: The FEIS should analyze potential mitigation measures, such as runoff containment. If this is not feasible, all adverse effects to downstream watersheds should be analyzed and disclosed An EIS shall provide a full and fair discussion of significant environmental impacts. 42 U.S.C. 4332(C); 40 CFR §1502.1.
AGFD	3	Surface Water Quality	34	4-12	COMMENT: The discussion of cumulative effects on surface water quality is inadequate. The text should discuss the cumulative effects of mine stormwater runoff in connection with other potential development projects in the watershed. *Klamath-Siskiyou Wildlands Center v. Bureau of Land Management*, 387 F. 3d 989 (9th Cir. 2004).
AGFD	3	Surface Water Quality	34	14-18	The text notes that with regard to surface water quality, climate change predicts an increase in extreme rainstorms and flooding across the desert Southwest, and that this predicted change in weather patterns could have an effect on the quality of stormwater runoff. An increase in more extreme rainstorms and flooding would create higher volumes of surface flow passing through the ephemeral channels in a shorter period of time.

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					RECOMMENDATION: The FEIS should expand this discussion to discuss the surface water effects of extreme storms potentially creating unregulated contact stormwater runoff from mine facilities and ore stockpiles down the Barrel Canyon drainage and into OAWs.
AGFD	3	Surface Water Quantity	25	11-19	The text notes that the Rosemont Copper Company mining multi-sector general stormwater permit requires zero discharge of stormwater that comes into contact with ore stockpiles or processing facilities. Contact stormwater runoff from these areas is to be retained onsite in stormwater or process ponds and recycled as process water. COMMENT: The text should reflect that on-site stormwater and process ponds may not capture all contact stormwater from large or extreme storm events. It must also be noted that the dam might not retain flows from even moderate precipitation events given the small size of the impoundment. RECOMMENDATION: The FEIS should disclose the frequency of 2AF or greater storm events reporting to the compliance dam.
AGFD	3	Geology	33	10-27	The text states that sediment enters stormwater through erosion of native soils, the dry stack tailings facility and the waste rock facility. Stormwater management facilities have been designed to maintain total suspended sediment concentrations in stormwater similar to baseline conditions. Sediment delivery to the downstream watershed is expected to decrease from baseline conditions, while suspended sediment concentrations are expected to remain relatively unchanged. COMMENT: Uncontained stormwater runoff which overtops the compliance point dam may contain sediments from mine processing facilities, the dry stack tailings and waste rock facilities. The repeated failure of the dam may add significant sediment loads to the watershed. RECOMMENDATION: Highly turbid waters discharged to Barrel Canyon should be evaluated against Arizona narrative water quality standards, and potentially adverse effects examined in the text.
AGFD	3	Seeps	16	21-25	The text states that the mine has the potential to directly affect the surface water

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		Springs Riparian			quality of Lower Davidson Canyon and Lower Cienega Creek through stormwater runoff. No further description of this potential adverse impact is provided. RECOMMENDATION: The NEPA "hard look" standard requires a description of all potentially adverse environmental effects. 43 U.S.C. 4332(C).
AGFD	3	Seeps Springs Riparian	16	19-20	The text states, in a bullet, that the proposed mine has the potential to directly affect groundwater quality for all three reaches (Upper Cienega Creek, Lower Cienega Creek, and Davidson Canyon) of Outstanding Arizona Waters. No further description or explanation is provided. COMMENT: The "hard look" standard of NEPA requires a more detailed description than vague statements such as "may affect" or "potentially affect." General statements about "possible effects" or "some risk" does not constitute a 'hard look' absent a justification why more definitive information could not be provided. *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F. 3d 1372 (9th Cir. 1998).
AGFD	3	Seeps Springs Riparian	42	Table 111	The Groundwater Quality section states that seepage from the mine does not exceed AAWQS and that no groundwater quality impacts to OAWs in Davidson Canyon and Lower Cienega Creek are predicted. COMMENT: Table 111 appears to contradicts the text on Page 16, lines 19-20 (quoted above) that the proposed mine has the potential to directly affect groundwater quality in Lower Davidson Canyon, Lower Cienega Creek and Upper Cienega Creek. NEPA requires a discussion of all environmentally adverse effects. 42 U.S.C. 4332(C); 40 CFR §1502.1.
AGFD	3	Seeps Springs Riparian	42-44	Table 112	The text topic is the mine's potential effect on Outstanding Arizona Waters. The text analyzes and summarizes the predicted water quality for waste rock runoff and existing water quality in Barrel Canyon, Davidson Canyon and Cienega Creek, including the ability to meet the anti-degradation standards for Outstanding Arizona Waters. COMMENT: Table 112 indicates that selenium and arsenic from waste rock

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					runoff exceeds existing water quality values for selenium and arsenic in Cienega Creek. A.A.C.R. 18-11-107.01(C)(3) Tier 3 antidegradation criteria requires an applicant seeking authorization for a regulated discharge to a tributary to, or upstream of, an OAW demonstrate in a permit application or in other documentation submitted to ADEQ that the regulated discharge will not degrade existing water quality in the downstream OAW. The Department agrees with the statement in the text that it would be difficult to predict or model any potential impacts given the distance from the mine site to the OAWs (12 miles) and the relatively low values of selenium and arsenic in the waste rock runoff, which reflects the limited contact time of stormwater with the waste rock. As noted above, a water quality monitoring program of captured stormwater in process ponds and impoundments will measure the actual amounts of mining metals in stormwater. Furthermore, the text should contain a discussion of potential mitigation measures. *See* Comment below on Mitigation Measure FS-GW-01 (Monitoring of Waste Rock for Seepage).
AGFD	3	Seeps Springs Riparian	42-44	Table 112	The text and Table 112 focus on waste rock runoff on existing water quality in Barrel Canyon, Davidson Canyon and Cienega Creek. No discussion or analysis of the potential effects of seepage from the Dry Stack Tailings facility is presented.
					COMMENT: *See* Comments below. AGFD repeats its DEIS comment that the dry stack tailings facility is expected to discharge seepage for 500 years, that portions of the seepage are outside the mine pit capture zone, and that the seepage will proceed down the Barrel Canyon drainage.
AGFD	2	Alternatives	21	3-7	The text states: "[p]rotection of water quality following mine closure would be achieved by . . .capture of possible impacted mine site groundwater by localized groundwater flowing into the pit". COMMENT: the majority of the entrained seepage from the dry stack tailings facility (DSTF) will not be captured by the mine pit, but will flow downgradient following groundwater pathways into the Barrel Canyon drainage for the predicted drain-down period of 500 years. *Dry Stack Tailings Storage Facility*

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					Final Design Report Section 6.0 (AMEC 2009). A review of *Technical Memorandum, Rosemont Area-Wide Fate and Transport and DIA Assessment* (Tetra Tech, August 31, 2010) notes that approximately 74% of the DSTF is outside the predicted pit capture zone, and that dry stack tailings facility is expected to recharge the underlying aquifer at a rate of over 10 acre-feet per year. A review of Table 4 reflects that the projected concentrations leaching from the DSTF are up to 559 mg/l for sulfate, which significantly exceeds the secondary drinking water standard of 250 mg/l. Additionally, the total dissolved solids concentrations are expected to be 810 mg/l, which is higher than background concentrations of 400 mg/l. Anticipated concentrations of magnesium, potassium, fluoride, molybdenum and selenium in the DSTF seepage are also greater that background water concentrations. The seepage "will flow generally north and northwest beyond the project area. Project-related recharge sources outside the pit capture zone have the potential to impact down-gradient groundwater quality." Figure 6-2 of the *Regional Groundwater Flow Model, Rosemont Copper Project* (Tetra Tech, 2010b) shows the groundwater flow in the area of the DSTF is eastward along Barrel Canyon into the Davidson Canyon drainage. This small scale effect may be local, with contaminated groundwater migrating along the creek in the ribbon of alluvial sediments along the creek, or may be more regional in nature. If this occurs, the impacted groundwater may discharge to surface water or migrate downgradient along Davidson Canyon. The FEIS should contain a discussion of monitoring and mitigation measures for potential seepage from the DSTF. *See* the Comment below on FS-GW-01 and FS-GW-03. An EIS must contain a full and fair discussion of significant environmental impacts of the proposed action and analyze all reasonable alternatives which would avoid or minimize adverse impacts. 42 U.S.C. 4332(C).
					COMMENT: Although the groundwater flow model constructed by Tetra Tech (2010) indicates "north and northwest" flow from the area of the DSTF, it is clear from the observed water level data that the flows are eastward down Barrel Canyon.

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					RECOMMENDATION: The FEIS should analyze and disclose potential impacts from the DSTF to water quality in Barrel Canyon and Davidson Canyon, including the OAWs.
AGFD	3	Seeps Springs Riparian	43	Table 112	A new Table should be added to summarize predicted water quality for DSTF seepage and existing water quality in Barrel Canyon, Davidson Canyon and Cienega Creek OAWs for magnesium, potassium, sulfate, fluoride, total dissolved solids, and molybdenum. AGFD repeats its DEIS comment that that potentially adverse effects of mine-related seepage discharges to surface waters should be analyzed against relevant numeric and narrative water quality standards, wildlife water quality standards and the anti-degradation Tier 3 criteria for the OAWs in the downstream watershed.
AGFD	3	Geochemistry	30	8-14	The text states: "Existing and reasonably future use of groundwater in the project area (Davidson Canyon watershed) is limited to domestic wells. None of the individual domestic wells that would occur within the area likely to be affected by tailings or waste rock seepage, as these discharges would be captured by the mine pit lake and do not exceed any water quality standards applicable to these individual wells that would preclude use for domestic purposes". COMMENT: Modeled seepage from the DSTF outside the pit capture zone exceeds SDWA secondary standards for sulfate. An EIS requires a discussion of potential impacts on groundwater wells and drinking water quality, and a discussion of reasonable alternatives to avoid or minimize adverse impacts. 40 CFR 1502.14(f); 1502.16(h); 1508.14. Potential mitigation measures includes the installation of interceptor wells or wellhead treatment. The Freeport-McMoran Sierrita Mine in Sahuarita is pumping a sulfate plume and replacing affected groundwater wells due to tailings sulfate seepage, which is a concern at many other mine sites.
AGFD	3	Soils	15	6-9	The discussion of DSTF stability appears limited, consisting of a single

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	3	Geochemistry	30	19-22	paragraph in the "soils" section and a sentence in Ch. 3, Geochemistry. The FEIS text states that "overall stability of the tailings and waste rock facilities is critical to reclamation success. Structurally, the tailings and waste rock facilities must be designed to prevent mass wasting and collapse in order to provide a stable surface for vegetation growth". COMMENT: DSTF impoundment failure could have dramatic and unanticipated environmental consequences for downstream canyons, riparian habitat and streams.
AGFD	3	Soils	15	9-16	The text states: "AMEC Earth and Environmental (2009) conducted stability analyses of the dry-stack tailings facility, and Tetra Tech (Mohseni 2010) conducted stability analyses of the waste rock facility. In both cases, modeling indicated that the designed waste rock and tailings facilities are more stable than what is required by regulations, based on the planned crest height, bench widths, and slopes. The minimum factor-of-stability values required under regulations as best available control technology are 1.0 for seismic failure and 1.3 for static failure. As modeled, the factor-of-stability values for the tailings and waste rock facilities range from 1.0 to 1.2 for seismic failure and from 1.9 to 2.3 for static failure". COMMENT: The *Technical Memorandum, Liquefaction and Stability Analyses-Rosemont Dry Tailings Facility* (Tetra Tech, June 12, 2007) notes that based on laboratory test results, liquefaction of the DSTF may occur at moisture contents ≥ 18.8%. According to the text, since the tailings are proposed to be 'dry-stacked" at a moisture content below 16% for handleability and trafficability during conveyor transport and placement, "the tailings will not normally be susceptible to liquefaction". COMMENT: The text may need to describe the conditions under which the tailings may lose stability and how the DSTF is engineered to avoid that result.
AGFD	2	Alternatives	21	23-25	The text states: "The top of the tailings facility would be relatively impervious. That is, all precipitation would remain on the top of the tailings facility to

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					evaporate". The *Technical Memorandum, Liquefaction and Stability Analyses-Rosemont Dry Tailings Facility* (Tetra Tech, June 12, 2007) states "[l]imited higher moisture zones within the tailings mass created by meteoric water may potentially occur" which "could form discrete liquefaction-susceptible layers in the tailings mass". The *Memorandum* then determined that that both the upstream and downstream embankments of the DSTF can tolerate five-foot thick liquefied layers of tailings at the top of each lift stage. COMMENT: According to the *Technical Report, Design and Evaluation of Tailings Dams* (EPA Office of Solid Waste, August 1994), there are a number of common failure modes besides liquefaction to which tailings embankments may be susceptible, including slope failure from rotational slide, overtopping, foundation failure, erosion, and piping. It is not clear from the FEIS text whether these other factors have been evaluated.
AGFD	App. B	Mitigation and Monitoring Plan	15		COMMENT: FS-GW-01 (Monitoring of Waste Rock for Seepage) notes that the waste rock facility is not predicted to allow infiltration of precipitation and subsequent seepage. FS-GW-01 contains a monitoring requirement for moisture content of the waste rock facility for through the active mining phase. If seepage occurs, the leachate is to be collected and sampled on a quarterly basis. COMMENT: While the FEIS contains a Waste Rock Segregation Plan (OA-GW-02) and additional waste rock characterization (FS-GW-03), the text lacks discussion of possible mitigating measures if acidic seepage or seepage with metals constituents in excess of water quality standards develops. *Okanogan Highlands Alliance v. Williams*, 236 F. 3d 468 (9th Cir. 2000) (EIS which contained general discussion of steps to prevent acid rock drainage if it develops, such as increased frequency of monitoring; implementation of interim water management plan to stabilize the situation; development of a conceptual engineering plan of water treatment system alternatives to remedy situation, such as precipitation, filtration, ion exchange; reverse osmosis, etc. satisfies NEPA's requirements for a reasonably complete discussion of possible mitigation measures).

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					RECOMMENDATION: The FEIS and FS-GW-01 should be expanded with a general discussion of the process for achieving compliance with water quality standards in compliance with NEPA, 40 CFR 1502. 16 (EIS shall include a discussion of means to mitigate adverse environmental impacts).
AGFD	App. B	Mitigation and Monitoring Plan	16		COMMENT: The Department strongly supports FS-GW-02, in which the Forest requires additional sampling of flowing springs and groundwater wells at off-site locations. The Department suggests, in addition to semi-annual sampling at springs, additional sampling following uncontrolled stormwater discharges from the minesite, including sampling in Davidson Canyon and Lower Cienega Creek OAWs. The Department also suggests that Rosemont timely report (within 30 days) to CNF results of sampling upon receiving any analytical reports showing exceedances of AAWQs or surface water numeric or narrative standards (rather than reporting the results on an annual basis).
AGFD	App. B	Mitigation and Monitoring Plan	17		COMMENT: The Department strongly supports FS-GW-03, in which CNF requires as a supplementary monitoring measure (in addition to ADEQ requirements) a more detailed waste rock and DSTF characterization sampling plan with its sampling protocols, to be approved before the final MPO. The purpose of the plan is to develop an ongoing comprehensive data set during mine operations in order to determine the composition and potential long-term, post-closure behavior of waste materials with respect to acid generation and metals leaching. The text notes that this information will better inform the Forest's long-term management of waste rock and tailings facilities, including the Forest's management responsibilities that would continue after release of bonding and after discontinuation of surface and groundwater quality monitoring under Rosemont's Aquifer Protection Permit. The FEIS should also contain a discussion of the mitigation measures that can be undertaken in the event characterization suggests that acid mine drainage or metals leaching may occur from the Rosemont facility during operations or post-closure. All relevant mitigation measures that could improve the project are to be identified, even if outside the jurisdiction of the USFS. 40 CFR 1502.16(h); 1505.2(C). It should be noted in the FEIS that EPA is proposing the development of

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					financial responsibility requirements for the hardrock mining industry. 74 F.R. 37213 (Identification of Priority Classes of Facilities for Development of CERCLA Section 108(b) Financial Responsibility Requirements). The rule, if promulgated, would require the hardrock mining industry to post financial responsibility for remediation costs of hazardous substance releases from their mine sites.
AGFD	App. B	Mitigation and Monitoring Plan	17		COMMENT: FS-GW-O3 contains as a requirement additional DSTF tailing characterization (both tailing and process water) during operations, to be described in a detailed waste rock/DSTF sampling plan to be developed by Rosemont and approved by CNF prior to the final MPO. FS-GW-03 should be expanded to include monitoring of the DSTF for seepage, and a discussion of possible mitigating measures if sulfates, acidic seepage or seepage with metals constituents in excess of water quality standards develops. *See* the Comment above on FS-GW-01. Potential mitigation measures should include a general discussion of installation of interceptor wells to capture seepage.
AGFD	App. B	Mitigation and Monitoring Plan	21		FS-SSR-01 provides for the transfer of portions of Cienega Creek surface water rights to the "Arizona Game and Fish Department" or "another entity authorized under Arizona law to hold a surface water right for recreation or wildlife purposes", and the described sever and transfer of those water rights to become in-stream flow rights to Upper Cienega Creek within the Las Cienegas National Conservation Area appears to be contingent on a future determination by ADWR that a special use permit may be issued for transferring these water rights to BLM lands. It is unknown at this time whether ADWR would accept a special use permit as a sufficient legal interest. COMMENT: This mitigation may be beyond the authority of CNF to ensure or enforce. No entity is identified in FS-SSR-01 who has agreed to accept transfer of these water rights. Furthermore, CNF cannot guarantee that this mitigation can be performed , as the action depends on the successful navigation of complex administrative and legal proceedings involving the Arizona Department of Water Resources, the water rights holder, BLM, and, potentially other permitted and

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					certificated water rights holders on Cienega Creek. Given these uncertainties, FS-SSR-01 cannot categorically state that the measure would partially mitigate for potential impacts to jaguar, ocelot, CLF, Gila chub, Gila topminnow, Huachuca water umbel, western yellow-billed cuckoo, and SWWF. ESA mitigation measures must involve "specific and binding" plans, "solid guarantees", and a "clear, definite commitment of resources". *Rock Creek Alliance v. U.S. Fish and Wildlife Service*, 663 F. 3d 439 (9th Cir. 2011).
AGFD	App. B	Mitigation and Monitoring Plan	22		FS-BR-16 states: "The Cienega Creek Watershed Conservation Fund could be used for monitoring of success of replacement or enhanced water features. If springs levels decrease, mitigation could come from this fund." COMMENT: Rosemont's long-term management and maintenance fund for enhanced or additional water features, not the Cienega Creek Watershed Fund, should mitigate for losses of replacement or enhanced water features. *See* Comment below.
AGFD	App. B	Mitigation and Monitoring Plan	28		FS-BR-05 states that Rosemont will be required to establish a long-term management and maintenance fund for maintenance of enhanced or constructed water features. No further details are provided. RECOMMENDATION: The text should be expanded to require this fund to cover the costs of management and maintenance of all enhanced or constructed water features for a definite period. Given that the dewatering of natural seeps and springs by the mine pit is in perpetuity, there should be sufficient funding to maintain the replacement water features in perpetuity (e.g. 100 years).
AGFD	App. B	Mitigation and Monitoring Plan	30-31		FS-BR-08 states that Rosemont would purchase the Sonoita Creek Ranch and certificated water rights and convey them to a Corps-approved In Lieu Fee sponsor. Long-term site protection would be provided by the ILF sponsor. This mitigation measure is to partially mitigate mine impacts to nine identified federally-listed species. COMMENT: Neither the FEIS nor FS-BR-08 imposes any funding commitment upon Rosemont to implement conservation measures for federally-listed species at SCR, or to fund the maintenance of SCR in perpetuity for connectivity for

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					federally-listed species. Mitigation measures without a clear, definite commitment of resources for future improvements violate the ESA. *National Wildlife Federation v. National Marine Fisheries Service*, 524 F. 3d 917 (9th Cir. 2008). Federal regulations for Compensatory Mitigation for Losses of Aquatic Resources, 33 CFR at 332.3(j)(3), allow Section 404 compensatory mitigation projects to provide compensatory mitigation under the ESA, but the same credits may not be used to provide mitigation for more than one permitted activity (33 CFR 332.3(j)(1)(ii)). The proceeds from the sale of ILF credits are to be deposited into a dedicated account and spent *only* toward Corps-approved wetland function projects (32 CFR 332.8(i)). The ILF sponsor may <u>not</u> expend ILF funds to implement ESA-mandated conservation measures, or mandatory terms and conditions of an incidental take statement for federally-listed species. FS-BR-08 is incorrect in its statement that that the ILF sponsor is responsible for implementing ESA-required habitat projects benefiting jaguar, ocelot, Mexican spotted owl, LLNB, Gila Chub, Gila topminnow, CLF, western yellow-billed cuckoo, or the Huachuca water umbel. If the existence of SCR in a conservation status is perceived to be a benefit to listed species incidental to its function as an ILF project, then that should be stated explicitly. If there are actions to be undertaken at SCR for the purpose of conserving specific listed species, they should be specifically identified and resources allocated to achieve them. If SCR is to achieve both ESA-mandated conservation measures as well as ILF compensatory mitigation for Waters of the US at SCR, the company should be required to establish separate, dedicated funding *properly calculated* to fulfill all ESA-mandated conservation measures for species that are otherwise jeopardized by the Rosemont Mine Project. It is unclear to the Department how CNF can commit to ESA conservation measures or Terms and Conditions at SCR without a commitment of funding from RCC, or how CNF expects that resources will be available to ensure these ESA conservation measures will be performed. The CNF, as the action agency,

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					has an independent duty to ensure that its actions are in compliance with the ESA. *Center for Biological Diversity v. Salazar*, 804 F.Supp.2d 987, 990 (D. Ariz. 2011).
AGFD	App. B	Mitigation and Monitoring Plan	31		FS-BR-10 states that Rosemont would contribute $50,000 for camera studies on large predators, in order to determine locations where road crossing structures may be warranted in the future. COMMENT: The Department agrees there is limited data on the movement patterns of these species as well as other state trust species in the vicinity of the Rosemont Copper project, and little data on the extent to which the area is used by jaguars and ocelots. The Department has stated to CNF and FWS its concern that $50,000 is not enough to conduct the necessary studies and does not appear to be sufficient to determine much, and will likely contribute little, toward conservation of large carnivores or other terrestrial wildlife. RECOMMENDATION: The Department recommends a comprehensive study tracking the movement of wildlife species such as mountain lions, deer and javelina using satellite transmitter-collared animals. The cost of such a project is approximately $285,000. A camera study would be less effective, but a well-designed camera-only study would cost $175,000 at a minimum. Appendix B only requires RCC to fund a study to make a recommendation for a suitable crossing structure, rather than recommending conservation measures that will remediate the loss of connectivity. The funding provided is inadequate and does not meet CEQ Guidance that federal agencies should not commit to mitigation measures absent the expectation that the mitigation will be performed. Furthermore, there is no requirement that Rosemont fund any mitigation that may be identified as a result of information obtained through the camera or crossing structure studies. This is a significant omission. The loss of wildlife movement connectivity between the Santa Rita and Whetstone mountains as a result of Rosemont-mine generated traffic, which will place 455 mine trucks a week on State Route 83 on a 24/7 basis (along with employee commuter traffic) calls for the identification of viable alternatives and mitigation measures. *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F. 3d 1372 (9th Cir. 1998). None is

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					provided in FS-BR-10.
AGFD	App. B	Mitigation and Monitoring Plan	34		COMMENT: FS-BR-14 requires Rosemont to survey for western yellow-billed cuckoo in potential nesting areas prior to vegetation clearing. COMMENT: A.R.S. §17-236 makes it unlawful to take, injure or harass any bird upon its nest, or remove the nests or eggs of any bird, except as authorized by an order of the Arizona Game and Fish Commission. Absent an Avian Protection and Mitigation Plan coordinated with the Arizona Game and Fish Department, FS-BR-14 should be applied to all nesting birds protected by state law pursuant to ARS §17-236.
AGFD	App. B	Mitigation and Monitoring Plan	35		FS-BR-16 requires Rosemont to establish an "endowment", the Cienega Creek Watershed Fund, to restore the watershed, promote "adaptive management" conduct "on-the-ground" restoration and "preserve and enhance aquatic and riparian ecosystems" and" potentially compensate for or offset impacts to" six federally-listed species. The Fund is to be managed by "AGFD or other to-be-designated third party". Rosemont would be responsible for funding the Conservation Fund at a rate of $200,00/year for 10 years beginning on April 1 of the year following the year in which copper concentrates are initially produced. The BLM and AGFD would be responsible for identifying potential mitigation actions; coordinating those actions with the Forest Service, USFWS, and other key stakeholders; overseeing expenditures from the Fund; and all monitoring and reporting. COMMENT: Both the funding, and the implementation of conservation measures to benefit federally-listed species, is the responsibility of Rosemont. The FEIS does not clearly identify Rosemont as the entity responsible for the implementation of ESA conservation measures. No other entity, including AGFD, has agreed to assume the responsibilities outlined in FS-BR-16. CEQ Guidance and Ninth Circuit Court of Appeals case law require the federal action agency to ensure that identified conservation measures can be performed. The Draft BO requires conservation measures to be implemented, and annual

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					reports prepared, for the life of the mine (25 years) and for five years post-closure. FS-BR-16 only requires Rosemont to contribute funds for a 10-year period. Payment of these funds, at only $200,000/year, is *prima facie* insufficient to create an endowment that can generate sufficient interest to fund all activities contemplated for the Fund over a 30-year period. The Department is unable to determine whether the Conservation Fund will achieve its intended objectives given complete lack of direction in the FEIS (as well as the draft BO) and the unfocused descriptions of the Fund's intended uses. Furthermore, the Fund may be grossly inadequate given all the uses intended. Explicit expectations should be identified in the FEIS and reasonable cost estimates should be provided if Rosemont Copper or its third party service provider is expected to achieve the conservation outcomes. Conservation measures must be reasonably specific, certain to occur, and capable of implementation; subject to deadlines or otherwise enforceable obligations; and must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards. *Sierra Club v. Marsh,* 816 F.2d 1376 (9th Cir.1987). ESA mitigation measures must involve "specific and binding" plans, "solid guarantees", and a "clear, definite commitment of resources". *Rock Creek Alliance v. U.S. Fish and Wildlife Service,* 663 F. 3d 439 (9th Cir. 2011). Uncertain, unidentified and underfunded mitigation measures to compensate for impacts to listed species and the watershed are not in compliance with CEQ Guidance or the ESA.
AGFD	App. B	Mitigation and Monitoring Plan	35		FS-BR-16 states that up to 15 percent of the Cienega Creek Watershed Fund could be used for "administrative costs". COMMENT: A payout from the Fund at $200,000/year results in a yearly allowance of $30,000 for administrative costs, which is apparently expected to cover the following: the undesignated third party's direct costs for salaries, ERE, travel, meals and incidental costs in meeting with CNF, BLM, FWS, and "other key stakeholders" in identifying and planning projects; costs responding to requests from the CNF Biological Monitor; all habitat and species inventories; all

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					"research", all permitting and environmental/regulatory compliance costs (e.g. NEPA); legal costs in defending water rights; costs of fund portfolio administration; costs of fund expenditure audits by CNF and "all monitoring and reporting" which presumably includes the costs of compiling data and preparing the Cienega Creek Watershed section of Rosemont's *Annual Conservation Measure Implementation and Monitoring Report* for submission to CNF for the life of the mine and five years post-closure. AGFD, which has extensive experience in permitting, designing and implementing on-the-ground conservation projects, was not consulted in any aspect of the development of the Conservation Fund concept. The provision for $30,000 a year for only 10 years "administrative costs" is completely unrealistic.
AGFD	App. B	Mitigation and Monitoring Plan	38		COMMENT: In FS-BR-19 CNF will require monitoring of roadkill (which is expected to increase from increased mine traffic) on SR 83 but does not describe potential mitigation based on this information. . The purpose of such data collection should be to determine where a wildlife crossing or what other mitigative action should occur. The FEIS is required to identify all reasonable alternatives to the loss of wildlife connectivity, including a discussion of mitigation measures such as the construction of road crossing structures. 42 U.S.C. 4332(C).
AGFD	App. B	Mitigation and Monitoring Plan	72		RC-TA-01 describes an agreement between Rosemont and ADOT to implement road construction improvements to reduce impacts to the public resulting from increased traffic on SR 83. COMMENT: No road improvements, such as wildlife crossing structures, are described to mitigate for wildlife mortalities or loss of genetic diversity caused by the loss of connectivity between mountain blocks as a result of Rosemont-generated mine traffic.
AGFD	App. B	Mitigation and Monitoring Plan	78		COMMENT: RC-TA-02 states Rosemont would enter into the Cooperative Landowner Incentive Program to allow some public access to portions of Rosemont-owned private lands. The Department will work with Rosemont to facilitate public access. "Landowner Incentive Program" should be changed to "Landowner Relations Program". The Landowner Incentive Program is a

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					Natural Resource Conservation Service funded program for which the Department no longer receives funding.