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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF UTAH CONTENTION DD – ECOLOGY AND SPECIES

Applicant Private Fuel Storage, L.L.C. ("Applicant" or "PFS") files this motion for summary disposition of Utah Contention DD "Ecology and Species" ("Utah DD") pursuant to 10 C.F.R. § 2.749. Summary disposition is warranted because there exists no genuine issue as to any material fact relevant to the contention and PFS is entitled to a decision as a matter of law. This motion is supported by a Statement of Material Facts as to which PFS asserts there is no genuine dispute, and the Declarations of Dr. Clayton White, Dr. Clyde Pritchett, Dr. Ronald Kass and Robert Hoffman and the deposition transcript of the State's only identified witness.

I. STATEMENT OF THE ISSUE

As currently admitted, Utah DD asserts:

> The Applicant has failed to adequately assess the potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and species in the region as required by 10 C.F.R. §§ 72.100(b) and 72.108 and NEPA in that:
>
> 1. The License Application fails to address all possible impacts on federally endangered or threatened species, specifically peregrine falcons nesting on the Timpie Springs Waterfowl Management Area.

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SECY-02

> 2. The License Application fails to include information on pocket gopher mounds which may be impacted by the proposal.
>
> 3. The License Application has not adequately identified plant species that are adversely impacted or adequately assessed the impact on those identified, specifically the impact on two "high interest" plants, Pohl's milkvetch and small spring parsley.
>
> 4. The License Application does not identify, nor assess the adverse impacts on, the private domestic animal (livestock) or the domestic plant (farm produce) species in the area.[1]

The Atomic Safety and Licensing Board ("Licensing Board" or "Board") subsequently clarified the scope of the admitted contention by confirming that paragraphs one and three are limited to the specific species identified.[2]

Utah DD raises no genuine dispute as to material facts warranting a hearing. Not only does the ER discuss the matters of concern to the State, but the NRC Staff's Draft Environmental Impact Statement,[3] which is the controlling document, addresses each item identified by the State in more than adequate detail. Therefore, the State's claims, if they ever had any basis, have been rendered moot by the DEIS. Further, PFS is filing as part of this motion declarations from four scientific and academic experts which demonstrate that the State's claimed impacts are not adequately addressed are in fact negligible or non-existent.

First, the declaration of Dr. Clayton White,[4] a renowned expert on peregrine falcons, reviews the State's claims of inadequately addressed impacts on the peregrine falcons nesting at the Timpie Springs Wildlife Management Area ("Timpie Srings WMA").

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[1] Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 204-205 (1998)..

[2] Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-98-10, 47 NRC 288, 296 (1998).

[3] NUREG-1714, "Draft Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility on Tooele County, Utah" (June 2000) (hereinafter "DEIS").

[4] Declaration of Clayton M. White (June 29, 2001) ("White Decl.").

Dr. White evaluates the claims by the State and finds that each is without basis in fact. As described in Mr. White's declaration, the peregrine falcon nesting box at the Timpie Springs WMA is approximately a mile northeast of the Timpie interchange on I-80. Id. ¶ 30. Thus, it is virtually next to a busy freeway and the main rail line for the Union Pacific. Further, at the Timpie interchange is a busy industrial plant (Cargill's salt plant) with significant vehicular and human foot traffic; (Id. ¶¶ 28,30). the proposed Intermodal Transfer Point ("ITP") is 1.8 miles further west and further away from the peregrine nesting box than the busy Cargill point. The fact that the peregrine falcons at the Timpie Springs WMA have successfully acclimated to the high levels of vehicular traffic, human traffic, and industrial activity at the Timpie Springs I-80 interchange is indicated by the success of falcons in breeding at that location. Id. ¶ 25. Any minimal, incremental additional activity from the construction and operation of Private Fuel Storage Facility ("PFSF"), in any of the proposed alternate configurations, is in Dr. White's words, a "non-issue." Id. ¶ 34.

PFS's other experts have similarly addressed each of the other alleged impacts raised by the State in Utah DD. In each instance, the experts concluded that the PFSF will have no adverse impact. For example, PFS has surveyed the areas that may be affected by each of the alternative configurations of the PFSF for the presence of Pohl's milkvetch and Small Spring Parsley (Basis 3).[5] No suitable habitat for Small Spring Parsley was identified in any of those areas and the potential habitat for Pohl's milkvetch was extremely limited and dominated by invasive plants that would inhibit the establishment of Pohl's milkvetch.

Further, PFS has clearly considered the radiological effects on livestock, wildlife, and the environmental impact of that radiation, contrary to the State's claim in Basis 4 of

[5] Declaration of Ronald J. Kass (June 28, 2001) ("Kass Dec.").

Utah DD. Robert Hoffman, former chairman of the Radiation Control Board for the State of Utah, addresses the radiological impact of the PFS project as described in the DEIS.[6] The radiation dose levels, which the State does not contest, will result in minimal increases in the background radiation and will have no adverse effects whatsoever on farm produce and domestic animals. Hoffman Decl. ¶ 25.

PFS has likewise had a distinguished academic and researcher conduct a survey for the presence of Skull Valley Pocket Gophers.[7] Dr. Clyde L. Pitchell is an emeritus associate professor of zoology from Birgham Young University. While Dr. Pritchett found some pocket gophers burrows within some potential project construction areas, he found that pocket gophers have a robust population in immediately adjacent habitat and are widespread in the Skull Valley. Pritchell Decl. ¶¶ 18-21. PFS will relocate any affected individual pocket gophers to this adjacent habitat, mitigating any impact on local pocket gopher populations. Id ¶ 37. Even if this relocation were not successful Dr. Pirtchett point out that , the loss of a few individual pocket gophers will not have any adverse effects on the local and Valley-wide pocket gopher populations. Id ¶ 44.

The State has identified a single expert witness whose area of expertise and testimony would be limited to potential non-radiological impacts to peregrine falcons, relating to Basis 1.[8] Therefore, PFS is clearly entitled to summary dispositions on Bases 2, 3, and 4 of Utah DD. Further, the deposition testimony of Dr. Howe fails to establish any material issue of fact with respect to Basis 1 concerning peregrine falcons, and PFS is entitled to summary disposition of Basis 1 as well.

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[6] Declaration of Robert J. Hoffman (June 29, 2001) ("Hoffman Decl.").

[7] Declaration of Clyde L. Pritchett (June 29, 2001) ("Pritchett Decl.").

[8] The testimony of the State's witness, Dr. Frank P. Howe, only concerns the potential impact to peregrines and their prey species through traffic effects and loss of prey species habitat. Deposition of Frank P. Howe, (April 24, 2001) ("Howe Dep."). The State's witness will not offer testimony regarding radiological impacts on peregrine prey species, which is not a concern of the State. Deposition of Frank P. Howe (April 24, 2001_ ("Howe Dep.") at 40.

II. LEGAL BASIS

A. Summary Disposition

The standards for motions for summary disposition have been set forth previously.[9] The legal requirements concerning expert opinions in support of a contention are particularly relevant here.[10] These requirements include 1) demonstration that the affiant is an expert, and 2) an explanation of facts and reasons in the affidavit supporting the affiant's expert's opinion.[11] An affidavit made on "information and belief" is insufficient,[12] as are mere unsupported conclusions.[13] As the Supreme Court has held, reliable expert opinion must be based on "more than subjective belief or unsupported speculation."[14]

B. National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires that federal agencies prepare an Environmental Impact Statement (EIS) that describes the potential environmental impacts of a proposed major federal action significantly affecting the environment and discussing any reasonable alternatives. 42 U.S.C. § 4332; 40 C.F.R. § 1502.14. An EIS should provide "sufficient discussion of the relevant issues and opposing viewpoints to enable the decisionmaker to take a 'hard look' at environmental factors and make a reasoned decision." Louisiana Energy Services (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 88 (1998) (citing Tongass Conservation Society v. Cheney, 924 F.2d

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[9] See, Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-99-23, 49 NRC 485, 491 (1999); Applicant's Motion For Summary Disposition of Utah Contention C – Failure to Demonstrate Compliance With NRC Dose Limits," dated April 21, 1999, at 4-16.

[10] Id. at 10-15.

[11] See Mid-State Fertilizer Co. v. Exchange Nat'l Bank, 877 F.2d 1333, 1339 (7th Cir. 1989); Carolina Power & Light Co. (Shearon Harris Nuclear Plant, Units 1 and 2), LBP-84-7, 19 NRC 432, 447 (1984).

[12] Columbia Pictures Industries, Inc. v. Professional Real Estate Investors, Inc., 944 F.2d 1525, 1529 (9th Cir. 1991), aff'd on other grounds, 508 U.S. 49 (1993).

[13] Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), LBP-83-32A, 17 NRC 1170, 1177 (1983); Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-35, 50 NRC 180, 194 (1999).

[14] Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 590 (1993).

1137, 1140 (D.C. Cir. 1991)). The necessary level of detail required in an EIS is that which provides "information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned." All Indian Pueblo Council v. United States, 975 F.2d 1437, 1444 (10th Cir.) (1992) (quoting NRDC v. Morton, 458 F.2d 827, 836 (D.C. Cir. 1972)).

Agency compliance with NEPA is evaluated under a "rule of reason" standard. NRDC v. Morton, 458 F.2d 827, 836 (D.C. Cir. 1972); Claiborne CLI-98-3,), 47 NRC at, 97. NEPA requires an analysis "appropriate for the proposal and not the maximum possible environmental analysis for every proposal." Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 542 (1977). Thus, impacts are discussed in proportion to their significance. See 10 C.F.R. §§ 51.29(a)(2) and (3), 51.45(a)(1). Insignificant impacts need receive little or no treatment in the DEIS. See 10 C.F.R.§ 51.29(a)(3). Further, it is well settled that NEPA does not require evaluation of environmental impacts that are deemed only "remote and speculative" possibilities.[15]

In addition to the DEIS, the environmental record in this proceeding also includes material filed with this motion. See Allied-General Nuclear Services (Barnwell Nuclear Fuel Plant Separations Facility), ALAB-296, 2 NRC 671, 680 (1975).

III. PFS IS ENTITLED TO SUMMARY DISPOSITION OF UTAH DD

Although the State filed its contentions against the ER, it is appropriate for the Board to consider the State's environmental contentions as challenges to the DEIS.[16] Claiborne, CLI-98-3, 47 NRC at 84. As will be seen, since the potential impacts of the facility on certain animal and plant species are clearly addressed in the DEIS, as well as

[15] Yankee Atomic Electric Co. (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 89 (1996) (quoting Limerick Ecology Action v. NRC, 869 F.2d 719, 739 (3rd Cir. 1989))

[16] NEPA applies only to "federal actions" and, therefore, only to the NRC Staff's environmental analysis. Long Island Lighting Co., (Shoreham Nuclear Power Station, Unit 1), CLI-91-2, 33 NRC 61, 70 (1991) (citing cases).

by the evaluations of PFS's experts.[17] The State has failed to identify experts on Basis 2, 3 and 4, and its witness for Basis 1 could only provide unsupported speculation and belief as support for Basis 1 therefore PFS is entitled to summary disposition.

A. The DEIS evaluates all relevant impacts related to the peregrine falcon that nest in the Timpie Springs Waterfowl Management Area ("TSWMA") and shows them to be insignificant

The State has asserted in discovery that PFSF environmental analysis has failed to adequately assess four potential impacts of the PSFS on peregrine falcons whose habitat is the Timpie Springs WMA: the impact of increased rail and/or automotive traffic on the falcons themselves, the impact of such traffic on species that are prey to the peregrine falcon, the impact of loss of habitat on peregrine prey species, and the impact of peregrine prey species' exposure to radiation. However, as elaborated on below, the DEIS addresses each of these issues, and establishes that the impact of each on the peregrine falcon is insignificant. Further, the State's sole expert witness, Dr. Frank Howe, has offered no factual basis to support these assertions. In his deposition, the State witness offered only speculative statements that do not create a material issue of fact as to whether the facility would have a significant adverse impact on peregrine falcons.

In contrast to the State's vague speculation, PFS's expert has specifically addressed each of the issues raised by the State. As discussed in Dr. White's declaration the peregrine falcons at the Timpie Springs WMA already successfully live within about a mile of (1) a major interstate freeway, (2) the main rail line of a major railroad, and (3) a major industrial. Id. ¶¶ 20, 30. Indeed, as Dr. White notes, peregrines successfully live in many settings with much more activity, including major metropolitan areas. Id. ¶ 23.

[17] The Board may reach a conclusion on an issue based on evidence submitted to it with this motion even if the information is not contained within the DEIS itself. In that instance the DEIS would be "deemed amended pro tanto" without need for formal redrafting. See Barnwell, ALAB-296, 2 NRC at 680.

Therefore, given the inability of the State's expert, as evidenced in the deposition transcript, to come up with some unique facts, to suggest that the PFSF will some how have an adverse harm that is not considered in the EIS, PFSF is entitled to summary disposition on this issue.

1. The Actual Operation of the PFSF Will Have No Adverse Effect on Peregrines or Their Prey Species

The State incorrectly asserts that PFSF environmental analysis has not taken into account the effects of increased traffic levels on peregrine falcons or their prey species. In fact, the effect of vehicle traffic and railroad traffic is assessed in the DEIS (4.4.2.2, 5.4.2.2). During construction of the facility, there will be a maximum increase of approximately 560 vehicle trips per day along Skull Valley Road (DEIS 4.5.1.6). There would be no additional vehicle trips on the Skull Valley Road associated with the construction of the rail line option, which would be on the western side of Skull Valley (DEIS 5.5.1.1). Independent of either transportation option, the operation of the facility would add 86 vehicle trips per day along Skull Valley Road, a 14.9% greater use of the Skull Valley Road between Iosepa and Interstate 80 (DEIS 4.5.2.6) than the baseline use established in the DEIS. Depending on the transportation option used, nominal additional traffic would occur during operations. If the preferred rail option is used, one rail trip per week would be expected (DEIS 2.1.2.1, 5.7.2.4). If the ITP option is used, an additional eight heavy haul truck trips per week would be expected along Skull Valley Road (DEIS 5.7.2.4). These levels of traffic would have no impact on peregrines directly because the increase in traffic associated with any of the proposed transportation alternatives will not significantly increase the probability of direct peregrine fatalities through collisions with automobiles or trains. White Decl. ¶¶ 28, 33-34.

Likewise, these traffic levels will not interfere with peregrine behaviors such as foraging, breeding or rearing young. Far greater activity is already present at the Cargill

salt processing plant, less than a mile from the nesting tower, without disruption to the peregrines nesting in the Timpie Springs WMA. White Decl. ¶ 30. Given the current levels of vehicular and human foot traffic already in much closer proximity to the Timpie Springs WMA nest, and the lack of impact of the existing traffic levels, none of the transportation alternatives for construction and operation of the PFSF will have a negative effect on peregrines. White Dec. ¶¶ 25, 30.

The State also asserts that PFS has failed to address the impacts on peregrine prey species of their potential exposed to radiation. Again, this is incorrect. The ER and DEIS address the radiation dose levels to which wildlife, including peregrine prey species, will be exposed within the cask storage area (ER 4.2.9.2.2, DEIS 4.4.2.2), at the security fence surrounding the restricted-access area (ER 4.2.9.2.2, DEIS), at the range fence that encloses the Owner Controlled Area (ER 4.2.9.1.1, DEIS), and at the ITP (DEIS 5.7.2.4). The dose levels at each of these locations are inconsequential to the prey species. Hoffman Dec. ¶ 16. Moreover, peregrine falcons that consume such prey species would suffer no adverse effects. Hoffman Dec. ¶¶ 17-18.

In relation to the effect of direct collisions with cars or trains, the State's witness was unaware of any documented case from Utah of a pregerine being struck by a train (Howe Dep. at 44, 47) and was uncertain about the incidence of peregrine fatalities caused by collisions with automobiles believing that there . (Howe Dep. at 48-5). Likewise, the only postulated fatalities of prey species from train or vehicle collisions that the State's witness offered involved California Gulls (Howe Dep. at 59-60), which are not a preferred prey species of the peregrine falcon. White Dec. ¶ 38.

When asked about his radiological concerns, the State's witness indicated that he did not dispute any of the dose calculations that are contained in PFS's environmental analyses or have any basis for disputing those calculations. Howe Dep. at 27-28. When asked about the practical effect of those calculations, the State's witness provided no factual basis for his concerns other than speculating, without any explanation of what dif-

ference this would make, that there may be a difference between actual daily dose rates and average dose rates (Howe Dep. at 28).

2. The Loss of Potential Peregrine Falcon Prey Habitat through Construction and Operation of the PFSF Will Have No Effect on Peregrine Falcons

The State argues that the peregrine falcon population may be affected by the loss of habitat to the prey species that will result from the construction and operation of the PFSF, and that this impact has not been adequately considered. In fact, the DEIS and the ER both assess the possible loss of habitat of potential peregrine prey species by describing the amount and type of habitat lost during construction and operation of the PFSF (DEIS 4.4.3.2), the ITP (DEIS 5.4.1.2), and the railroad corridor (DEIS 5.4.2.2). Likewise, the impact of this loss of habitat on raptors, such as peregrine falcons is assessed (DEIS 4.4.3.2 (PFSF), 5.4.1.2 (ITP), 5.4.2.2 (railroad corridor)).

The DEIS evaluates the loss of foraging area caused by construction and operation of the PFSF (DEIS 4.4.3.2) as well as the loss of foraging area due to the possible construction and operation of the ITP (DEIS 5.4.1.2). In each instance, the DEIS evaluates the impact on the foraging of raptors generally and peregrine falcons, in particular, and determines it is small.[18]

This conclusion is correct and amply supported. The loss of foraging area due to the construction of the PFSF will not have any impact on the ability of falcons to feed because of the substantial distance from the PFS site to the TSWMA (25 miles), and the lack of abundant prey due to poor habitat for peregrine prey species at the PFSF.

[18] "The construction of the ITF would have a small impact to peregrine falcons because only a small amount of land would be altered at the ITF and it is unlikely that the falcons foraging bases (small mammals and birds) would be significantly impacted." Id. at 5-17.

While the ITP is closer to the TSWMA, the 4.5 hectares of shrub-steppe vegetation habitat represents a small proportion of the likely foraging area of a Timpie Springs based falcon. White Dec. ¶¶ 41-43. Moreover, peregrines at Timpie Springs would prefer the greater prey densities and larger prey size in the wetlands away from the ITP site than the lower prey densities that will be present at the ITP. White Dec. ¶¶ 36-37. The loss of habitat at the PFSF and at the ITP (if the ITP option is exercised) will have no impact on peregrine prey species, and thus no impact on the falcon population. White Dec. ¶¶ 41-43, 46-47, 49, 51-52.

Likewise, if the preferred (rail corridor) mode of transportation is used to deliver spent nuclear fuel to the PFSF, there will be virtually no impact to habitat TSWMA based falcons may use for foraging. The rail corridor runs down the west side of Skull Valley, approximately 20 miles west of Timpie, and well outside a Timpie Springs WMA based peregrine falcon's foraging range. White Dec. ¶ 44. The construction of the new line would temporarily clear 314 hectares along the rail line, and leave 63 hectares permanently cleared during the operation of the facility (DEIS 2.1.1.3). These areas of temporary or permanent loss of habitat are largely cold desert shrub-steppe, which attracts few species that would be of interest to peregrines. White Dec. ¶¶ 41,44. The combination of distance and lack of attractive prey species makes the impact of construction and operation of the low rail corridor on peregrines insignificant.

The State's witness was also unable to do anything other than speculate concerning the potential loss of prey habitat. First, the witness was uncertain as to what habitat was present at the site of the proposed ITP (or along the proposed rail corridor), or how much habitat would be affected (Howe Dep. at 62-64). Moreover, Howe was not aware of whether peregrine falcons from the Timpie Springs WMA foraged in the area of the proposed rail corridor (Howe Dep. at 64). The State's witness did indicate, however, that the Skull Valley, generally, does not have good habitat that would support peregrine fal-

con prey species (Howe Dep. at 67). The witness could only speculate as to which prey species might be present at the PFSF site (Howe Dep. at 73.)

B. PFS Has Adequately Assessed the Presence of Skull Valley Pocket Gophers at the PFSF and the Potential Impact of PFSF Operations on the Skull Valley Pocket Gophers

The State asserts that PFS has failed to include information on pocket gopher mounds that may be impacted by the PFSF. In fact, the DEIS (4.4.1.2, 4.4.5.2, 5.4.1.5, 5.4.4.2) specifically addresses the impact of the proposed project on Skull Valley Pocket Gophers, and establishes that the potential impact is insignificant and may even provide more suitable habitat for gophers at the PFSF OCA due to the revegetation plan.

1. Construction of the PFSF Will Not Affect Skull Valley Pocket Gopher Populations

A survey of pocket gopher mounds in Skull Valley conducted during April and May 2001, found four mounds along the proposed access road to the PFSF site, no mounds at the PFSF site itself, and a total of seven mounds along the proposed rail corridor (Pritchett Dec. ¶¶ 25, 39, 34). These figures demonstrate that the habitat at the PFSF site is unsuitable to pocket gopher habitation (Pritchett Dec. ¶ 25).

In addition, there are suitable locations outside the affected area where potentially affected gophers could be moved (Pritchett Dec. ¶¶ 37,39). PFS has committed to relocating any potentially affected pocket gophers to suitable habitats out of the affected areas.

Even in the absence of such relocation, the anticipated loss of gophers due to the PFSF construction would have no significant effect on the robust populations of the Skull Valley Pocket Gophers in their natural habitat in Skull Valley (Pritchett Dec.¶41).

2. Operation of the PFSF Will Not Have Any Effects on Skull Valley Pocket Gopher Populations

The State has also suggested in its discovery responses that PFS has not taken into account the effect of increased traffic levels on Skull Valley Pocket Gophers. This is incorrect. The DEIS evaluates the effect of the increased traffic levels on wildlife generally (DEIS 4.4.2.2). Because they spend almost their entire lives under ground, pocket gophers are far less susceptible than other wildlife to any increase fatality due to traffic (Pritchett Dec. ¶¶ 42-45). The increased traffic levels due to the PFSF's construction or operation will thus have no significant impact on pocket gopher populations (Pritchett Dec. ¶ 45).

Thus, neither the construction nor the operation of the PFSF will adversely affect the population of Skull Valley Pocket Gophers, and no environmental impacts will be sustained on that basis.

C. PFS Has Adequately Assessed the Impact of the PFSF on Small Spring Parsley and Pohl's Milkvetch

The State asserts that the License Application fails to adequately assess the impact of the PFSF on two plant species, Pohl's milkvetch and Small Spring Parsley. In fact, PFS has conducted three surveys of areas that may be affected by the PFSF to establish the potential presence of these species (Kass Dec. ¶ 6). These three surveys covered the area within the PFSF outside perimeter, the ITP site, the rail corridor, and the alternate rail corridor. Neither Pohl's milkvetch or Small Spring Parsley were located in any of these areas.[19] Also, to the extent that any suitable habitat for Pohl's milkvetch existed, such habitat was overgrown with invasive annuals, whose presence inhibits the establishment of species such as Pohl's milkvetch (Kass Dec. ¶¶ 9, 11). Habitat suitable for Small Spring Parsley is completely absent from any of the areas surveyed (Kass Dec. ¶¶ 8, 11, 13).

[19] While Pohl's milkvetch was found in Skull Valley in May 1998, it was located outside of the areas that would be affected by any proposed portion of the PFSF project, on a road that leads to Hickman Knolls and would not be used for any facility traffic. Kass Dec. ¶ 17.

In addition, PFS proposes to undertake mitigation efforts to minimize disturbing any populations of Pohl's milkvetch or Small Spring Parsley that may be found within the project areas (DEIS 4.4.3.1, 4.4.5.1, 9.4.2). These mitigation methods are appropriate for both species (Kass Dec. ¶ 21).

For those reasons, the construction and operation of the PFSF will have no adverse impact on the Pohl's milkvetch and Small Spring Parsley populations in Skull Valley.

D. PFS Has Adequately Addressed Possible Radiological Impacts of the Facility on Private Domestic Animal (Livestock) and Plant (Produce) Species.

The State's final asserted basis for Contention Utah DD is that PFS has failed to take into account the radiological effects of operation of the PFSF on individual farming operations in Skull Valley; agricultural products prepared for personal use, human or animal systems, food chain alteration, and bee keeping operations. However, each of the items raised by the State is adequately addressed in the radiological analyses contained in the ER and DEIS. Those documents provide dose rates for exposure of wildlife and humans at various points inside and outside the facility. Among other calculations, dose rates are provided for: the transportation of the spent nuclear fuel to the PFSF, (DEIS 5.7.2), the OCA boundary fence (ER 4.9.2.1.1, DEIS 4.7.2.1), the security fence that encloses the restricted-access area (ER 4.2.9.2.2, DEIS 4.2.2), and the top and sides of the storage casks (ER 4.2.9.2.2, DEIS 4.2.2). The compliance of these dose rates with applicable guidelines or regulations is also documented in the ER (4.2.9.2.2) and DEIS (4.4.2.2).

Not only are the potential maximum radiological doses at all these locations within the acceptable limits set by NRC regulations, but the lack of effect of PFSF operations on livestock, plant produce and the human food chain is demonstrated by the fact that there are many places worldwide where humans and animals are exposed to back-

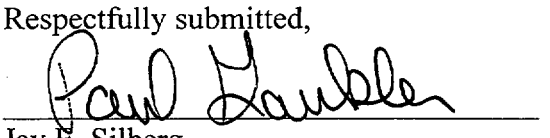
ground radiation doses that are significantly higher than those attributable to the proposed facility, without detectable adverse health effects. (Hoffman Decl. ¶ 20).

Moreover, the DEIS and ER analyze the effect of the radiation doses for wildlife (ER 4.2.9.2.2, DEIS 4.4.2.2) and humans (ER 4.2.9.1.1, DEIS 4.7.2.1). These dose rates will have no deleterious effects on humans, livestock or domestic produce (Hoffman Decl.¶ 22). Thus, radiation doses from operation of the PFSF will have no measurable adverse impact on domestic animals or plants, or the human population that consumes them.

IV. CONCLUSION

For the foregoing reasons, the Board should grant PFS summary disposition of Utah DD.

Respectfully submitted,



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Dated: June 29, 2001

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	

STATEMENT OF MATERIAL FACTS
ON WHICH NO GENUINE DISPUTE EXISTS

Applicant submits, in support of its motion for summary disposition of Utah DD, this statement of material facts as to which the Applicant contends there is no genuine issue to be heard.

1. Private Fuel Storage, L.L.C. ("PFS") submitted an Environmental Report ("ER") with its initial License Application dated June 20, 1997.

2. On November 23, 1997, the State of Utah filed as part of its contentions, Contention Utah DD, challenging the sufficiency of PFS's assessment of the "potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and species in the region as required by 10 CFR §§ 72.100(b) and 72.108 and NEPA."

3. On April 22, 1998, the Atomic Safety and Licensing Board ("Licensing Board" or "Board") admitted Utah DD. Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 204-05 (1998). As currently admitted, Utah DD asserts:

   The Applicant has failed to adequately address the potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and species in the region as required by 10 C.F.R. §§ 72.100(b) and 72.108 and NEPA in that the License Application

has not estimated potential impacts to ecosystems and "important species" as follows:

1. The License Application fails to address all possible impacts on federally endangered or threatened species, specifically the peregrine falcon nest in the Timpie Springs Waterfowl Management Area.

2. The License Application fails to include information on pocket gopher mounds which may be impacted by the proposal.

3. The License Application has not adequately identified plant species that are adversely impacted or adequately assessed the impact on those identified, specifically the impact on two "high interest" plants, Pohl's milkvetch and small spring parsley.

4. The License Application does not identify, nor assess the adverse impacts on, the private domestic animal (livestock) or the derivative plant (farm produce) species in the area.

4. In June 2000, the NRC Staff issued NUREG-1714, "Draft Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility on Tooele County, Utah" ("DEIS").

Basis 1: Peregrine Falcons

5. A nesting tower was constructed in the Timpie Springs Wildlife Management Area (WMA) in 1983. White Dec. ¶ 17.

6. This nesting tower is approximately one mile to the east of a salt processing plant located adjacent to the Timpie I-80 Interchange. White Dec. ¶ 17, 30.

7. There is significant vehicular traffic and human foot traffic at the Cargill salt processing plant located at Timpie Springs. White Dec. ¶¶ 28, 30.

8. The proposed ITP will be located 1.8 miles west of the Timpie I-80 Interchange. White Dec. ¶ 13.

9. The Timpie Springs WMA tower has been used for nesting since 1988. White Dec. ¶ 17.

10. Timpie Springs WMA based falcons have successfully bred at the tower, except for a four-year period ending in 1999. White Dec. ¶ 17.

11. The successful breeding of the Timpie Springs WMA peregrine falcons indicates that they have acclimatized to the vehicular and human foot traffic present along I-80 and the salt processing plant. White Dec. ¶ 30.

12. Increased automobile traffic due to construction and operation of the PFSF will have no impact on the peregrine falcons foraging or breeding at the Timpie Springs WMA. White Dec. ¶¶ 28, 33, 34.

13. Increased automobile traffic due to construction and operation of the ITP, if the heavy-haul truck transportation option is used, will have no impact on the Timpie Springs WMA peregrine falcons' foraging or breeding. White Dec. ¶¶ 28, 33, 34.

14. If the proposed rail corridor is built along the west side of the Skull Valley as proposed, the one train trip per week to the facility will have no impact on the Timpie Springs WMA peregrine falcons' foraging or breeding. White Dec. ¶¶ 28, 33, 34.

15. Increased automobile traffic due to construction and operation of the PFSF will not result in any significant increase in the probability of Timpie Springs WMA peregrine fatalities due to collisions with automobiles. White Dec. ¶¶ 23-24, 34.

16. Increased automobile traffic due to construction and operation of the ITP, if the heavy-haul truck transportation option is used, will not result in any significant increase in the probability of Timpie Springs WMA peregrine fatalities due to collisions with automobiles. White Dec.¶ ¶ 23-24, 34.

17. If the proposed rail corridor is built along the west side of the Skull Valley as proposed, the one train trip per week to the facility will not result in any significant increase in the probability of Timpie Springs WMA peregrine fatalities due to collisions with trains. White Dec. ¶¶ 23-24, 34.

18. Increased automobile traffic due to construction and operation of the PFSF will not result in any significant increase in the probability of automobile collisions with prey species of Timpie Springs WMA peregrine falcons. White Dec. ¶¶ 37, 39-40.

19. Increased automobile traffic due to construction and operation of the ITP, if the heavy-haul truck transportation option is used, will not result in any significant increase in the probability of automobile collisions with prey species of Timpie Springs WMA peregrine falcons. White Dec. ¶¶ 37, 39-40.

20. If the proposed rail corridor is built along the west side of the Skull Valley as proposed, the one train trip per week to the facility will not result in any significant increase in the probability of train collisions with prey species of Timpie Springs WMA peregrine falcons. White Dec. ¶¶ 37, 39-40.

21. The largest concentrations of suitable peregrine prey species are in the immediate Timpie Springs WMA wetlands habitat. This is in the opposite direction of the proposed ITP site. White Dec. ¶¶ 36-37.

22. Adult California gulls do not constitute a large proportion of a Timpie Springs WMA falcon's prey base. White Dec. ¶ 38.

23. The habitat at the proposed ITP consists of cold desert shrub-steppe. This habitat is only marginally suitable for some peregrine prey species. These species generally will not be attractive to Timpie Springs WMA peregrine falcons who have more attractive prey concentrations closer to the nesting tower. White Dec. ¶¶ 41-43.

24. The habitat at the proposed PFSF consists of habitat is suitable for species such as the horned lark, Western meadowlark, sage thrasher, and lark sparrow. These species generally do not nest in adequate densities to be attractive to Timpie Springs WMA peregrine falcons who have more attractive prey concentrations closer to the nesting tower. White Dec. ¶¶ 46, 49, 51-52.

25. The habitat along the proposed rail corridor consists of consists of cold desert shrub-steppe. This habitat is only marginally suitable for some peregrine prey species. These species generally will not be attractive to Timpie Springs WMA peregrine falcons who have more attractive prey concentrations closer to the nesting tower. White Dec. ¶¶ 41-44.

26. The distance of 25 miles between the PFSF and the nesting tower at the Timpie Springs WMA makes it very unlikely that a Timpie Springs WMA based falcon would forage regularly near the PFSF site. White Dec. ¶¶ 46-52.

27. The distance of 20 miles between the north end of the rail corridor and the nesting tower at the Timpie Springs WMA, combined with the small amount of prey makes it very unlikely that a Timpie Springs WMA based falcon would forage regularly along the rail corridor. White Dec. ¶¶ 31, 41-44.

28. The loss of 4.5 hectares of cold desert shrub-steppe habitat at the proposed ITP site would have no significant impact on Timpie Springs WMA peregrine falcons' prey base. White Dec. ¶ 43.

29. The loss of habitat at the proposed PFSF site would have no significant impact on Timpie Springs WMA peregrine falcons' prey base. White Dec. ¶¶ 46, 52.

30. The loss of habitat along the proposed rail corridor from wildfire or construciton would have no significant impact on Timpie Springs WMA peregrine falcons' prey base. White Dec. ¶ 44.

31. Peregrine falcon prey species at the proposed PFSF would receive a maximum radiation dose of 61.3 rem per year. Hoffman Dec. ¶ 15.

32. Peregrine falcon prey species at the proposed ITP would receive a radiation dose that would have an upward bound of approximately 1.49 rem per year. Hoffman Dec. ¶ 12.

33. Exposure of peregrine prey species at the maximum dose rate of 61.3 rem per year would have no affect on the prey species. Hoffman Dec. ¶ 16.

34. There will be no harmful effects to peregrine falcons that consume prey species that have been exposed to a maximum radiation dose of 61.3 rem per year . Hoffman Dec. ¶ 17.

Basis 2: Skull Valley Pocket Gophers

35. Skull Valley Pocket Gophers range over an approximately 500 square mile region within Skull Valley. Pritchett Dec. ¶ 20.

36. The PFSF site does not generally contain suitable habitat for Skull Valley Pocket Gophers with the exception of the very southeastern corner of the OCA. Pritchett Dec. ¶ 25.

37. The survey of the PFSF OCA and the access road to the PFSF, only four gopher mounds were located that would be affected by the construction of the access road. Pritchett Dec. ¶ 30.

38. Outside of the access road right of way, suitable habitat for Skull Valley Pocket Gophers exist for relocation of gophers from the four affected burrows. Pritchett Dec. ¶ 31.

39. Local populations of Skull Valley Pocket Gophers outside the access road right of way are robust. Pritchett Dec. ¶¶ 31, 43.

40. Any gophers from the four affected burrows will be relocated into nearby suitable habitat. Pritchett Dec. ¶¶ 37, 39.

41. Even if the relocation of the gophers from the three affected burrows were unsuccessful, the local population and Valley-wide population of the Skull Valley Pocket Gophers would not be negatively affected. Pritchett Dec. ¶ 41.

42. The survey of the proposed rail corridor located seven gopher burrows that would be affected by the construction of the rail line. Pritchett Dec. ¶ 34.

43. Any gophers from the seven affected burrows will be relocated into nearby suitable habitat. Pritchett Dec. ¶¶ 37, 39.

44. Even if relocation of the gophers from the affected burrows were unsuccessful, the local population and Valley-wide population of the Skull Valley Pocket Gophers would not be negatively affected. Pritchett Dec. ¶ 41.

45. Increased automobile traffic due to construction and operation of the PFSF will not result in any significant increase in the probability of automobile collisions with Skull Valley Pocket Gophers. Pritchett Dec. ¶ 45.

46. Increased automobile traffic due to construction and operation of the ITP, if the heavy-haul truck transportation option is used, will not result in any significant increase in the probability of automobile collisions with Skull Valley Pocket Gophers. Pritchett Dec. ¶¶ 43-45.

47. If the proposed rail corridor is built along the west side of the Skull Valley as proposed, the one train trip per week to the facility will not result in any significant increase in the probability of train collisions with Skull Valley Pocket Gophers. Pritchett Dec. ¶ 45.

Basis 3: Pohl's milkvetch and Small Spring Parsley

48. No suitable habitat for Small Spring Parsley is present at the proposed PFSF or ITP sites. Kass Dec. ¶¶ 8, 20.

49. No suitable habitat for Small Spring Parsley is present along the Skull Valley Road or the proposed rail corridors. Kass Dec. ¶¶ 8, 20.

50. No Small Spring Parsley was located at the proposed PFSF or ITP sites, or along either the Skull Valley Road or the proposed rail corridors during three surveys conducted in May 1998, June 1998, and June 1999. Kass Dec. ¶ 20.

51. No Pohl's milkvetch was located at the proposed PFSF or ITP sites, or along either the Skull Valley Road or the proposed rail corridors during the three surveys conducted in May 1998, June 1998, and June 1999. Kass Dec. ¶ 16.

52. Very little suitable habitat for Pohl's milkvetch exists throughout the areas surveyed. Kass Dec. ¶¶ 8, 16.

53. Suitable habitat that does exist for Pohl's milkvetch that does exist is dominated by invasive annuals. Kass Dec. ¶¶ 8,16

54. The presence of the invasive annuals in this habitat inhibits the establishment of Pohl's milkvetch into suitable habitat. Kass Dec. ¶ 16.

55. There is a very low probability that Pohl's milkvetch will occur in any of the surveyed areas. Kass Dec. ¶ 16.

56. There is a very low probability that Small Spring Parsley will occur in any of the surveyed areas. Kass Dec. ¶ 20.

57. The mitigation measures proposed by PFS are adequate to deal with any populations of Pohl's milkvetch that may occur in an affected area. Kass Dec. ¶ 21.

58. The mitigation measures proposed by PFS are adequate to deal with any populations of Small Spring Parsley that may occur in an affected area. Kass Dec. ¶ 21.

Basis 4: Livestock and Agriculture

59. The closest point at which domestic animal (livestock) or domestic plant (produce) life can approach the PFSF is the four-strand barbed wire range fence at the edge of the OCA. Hoffman Dec. ¶ 10.

60. A domestic range animal or domestic plant that was located at that closes point would receive a maximum radiation dose of 9.20 mrem per yar. Hoffman Dec. ¶¶ 10, 19.

61. The exposure to a maximum radiation dose of 9.20 mrem per year would have no significant ill-effects on any animal or plant so exposed. Hoffman Dec. ¶¶ 10, 19.

62. Exposure of domestic plants or animals to radiation doses of 9.20 mrem per year would have no effect on agricultural products (e.g., meat, eggs, milk) produced by or from those plants or animals. Hoffman Dec. ¶ 19.

63. No ill-effect would accrue to humans that consumed any agricultural products produced by or from domestic plants and animals exposed to the maximum radiation doses at the perimeter of the PFSF OCA. Hoffman Dec. ¶ 22.

64. The only domestic plant or animal that would be able to approach the PFSF more closely is bees. Hoffman Dec. ¶ 21.

65. The restricted-access area will be devoid of vegetation that might attract bees. Hoffman Dec. ¶ 21.

66. Even assuming that a bee would spend an entire half-year in contact with storage casks, the maximum radiation dose the bee would receive would be 61.3 rem per year. Hoffman Dec. ¶¶ 6, 15, 21.

67. Exposure of bees to a maximum radiation dose of 61.3 rem per year would have no effect on the bee itself. Hoffman Dec. ¶ 21.

68. Exposure of bees to a radiation dose of 61.3 rem per year would have no effect on the honey the bee produces. Hoffman Dec. ¶ 21.

69. Humans would neither be exposed to radiation or would suffer any ill-effects from consuming honey produced by bees subject to a maximum radiation dose of 61.3 rem per year. Hoffman Dec. ¶ 21.

70. Assuming an animal is exposed to a maximum radiation dose of 61.3 rem per year at the air inlet duct of a storage cask, no ill-effect would accrue to any animal so exposed. Hoffman Dec. ¶¶ 15-18.

71. Assuming an animal is exposed to a maximum radiation dose of 61.3 rem per year at the air inlet duct of a storage cask, no "genetic" or inheritable effect of that exposure would occur as a result of that exposure. Hoffman Dec. ¶ 22.

72. There will be no alteration of either wildlife or human food chains as a result of exposure of plants or animals to radiation from the PFSF. Hoffman Dec. ¶¶ 22-23.

Document #: 1134081 v.1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

CERTIFICATE OF SERVICE

I hereby certify that copies of Applicant's Motion for Summary Disposition of Utah Contention DD – Ecology and Species were served on the persons listed below (unless otherwise noted) by electronic mail with conforming copies by U.S. mail, first class postage prepaid, this 29th day of June 2001.

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

ATTACHMENTS FOR
APPLICANT'S MOTION FOR SUMMARY
DISPOSITION OF UTAH CONTENTION DD

Tab No.	Subject
A	Declaration of Clayton M. White
B	Declaration of Clyde L. Pritchett
C	Declaration of Ronald J. Kass
D	Declaration of Robert J. Hoffman
E	Deposition of Frank P. Howe

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

DECLARATION OF CLAYTON M. WHITE

Clayton M. White states as follows under penalties of perjury:

I. INTRODUCTION

1. I am currently a Professor of Zoology at Brigham Young University, Provo, Utah. In that capacity, I (a) teach courses in vertebrate zoology and various courses dealing with ornithology (the branch of zoology dealing with birds), such as general ornithology, world bird families, and raptor (bird of prey) biology; (b) give special lectures on birds or endangered species in such courses as bioethics, ecology, and conservation biology; (c) perform research in my field of expertise, including the publication of research papers in peer reviewed literature; (d) am the curator of ornithology at the Monte L. Bean Museum at Brigham Young; and (e) direct graduate student programs and mentor and counsel undergraduate students. I am providing this declaration in support of a motion for summary disposition of Contention Utah DD (Utah DD) in the above captioned proceeding concerning the Private Fuel Storage Facility (PFSF).

2. My professional and educational experience is summarized in the curriculum vitae attached as Exhibit 1 to this declaration. My area of expertise is the study of raptors with a focus on diurnal raptors (active by day) and especially the genus *Falco* and the peregrine falcon. Generally, my studies of raptors concern ecology (the relationship between an organism and its environment), biogeography (the geographic

distribution of an organism), or systematics (the evolution and classification) of groups and species.

3. I have been studying the biology and systematics of the peregrine falcon since about 1955, as a college undergraduate, and I completed a Ph.D. dissertation on the "Biosystematics of the North American Peregrine Falcon" in 1968. Further, I have published over 150 articles and scientific papers of which about 90% are in the peer reviewed literature. Of that total, approximately 70% deal with some aspect of the biology of the peregrine falcon (see curriculum vitae). My various accomplishments and studies concerning peregrine falcons include the following:

- As a spin-off of my Ph.D. dissertation, I described a new, third subspecies of peregrine falcons breeding in North American tundras – *Falco peregrinus tundrius*. This subspecies makes up the bulk of migrants moving along the eastern seaboard and the Gulf states during autumn and spring migrations as they move as far south as central Argentina and Chile.

- In 1966, I and a colleague (Tom Cade) were contracted by the U.S. Fish and Wildlife Service to collect enough peregrine material (blood, eggs, tissue) from Alaska to establish the levels of presumed pesticides within them because pesticides were thought to be the agent causing their decline towards extinction. This was the first such study in the U.S. and firmly established the relationship of pesticides and the declining numbers of peregrine falcons.

- I was a co-investigator on a contract from the National Science Foundation and the Arctic Institute of North America as part of the International Biological Program (an integrated program of biological studies undertaken by the international scientific community from 1967 to 1971) to study peregrine falcons in Arctic Alaska.

- I was a co-investigator on a contract to do environmental work on birds, primarily peregrine falcons and bald eagles, in the Aleutian Islands during the Atomic Energy Commission's underground nuclear testing program.

- I did the first and primary surveys for peregrine falcons and other endangered species for the U.S Fish and Wildlife Service along the proposed Alaska oil pipeline in the early 1970s and surveys for peregrine falcons in western Alaska for the Bureau of Land Management during the Alaska Native Claims Settlement Act period. The purpose of these

surveys was to document the location of peregrine falcons and other endangered species in the area.

- In addition to my numerous studies of peregrine falcons in North America, I was also sponsored by the Government of Victoria, Australia to do a 3 year study of peregrine falcons in that state in the mid-1970s and currently I am in my fifteenth year of a study of peregrines in Fiji, Vanuatu, and other parts of the South Pacific (where it is a rare species and at the terminus of its world wide distribution).

- I have advised 18 Masters thesis on raptors, of which 4 were on peregrine falcons, and 8 Ph.D. dissertations on raptors, of which 3 dealt with some aspect of peregrine falcon biology.

- Shortly after the peregrine falcon was placed on the endangered species list in the first part of the 1970s, I was appointed by the U.S. Fish and Wildlife Service to the Alaskan peregrine falcon recovery team and also to the Interim recovery team for the western U.S. The purpose of these teams was to identify actions that could be taken to increase the peregrine falcon population.

- Because of my experience and understanding of peregrine falcons, I have a contract to co-author, for Cornell University Press, the major work in book form on "The Peregrine Falcons of the World" that is due to have the first draft completed by January 2002. With the same co-author, we are doing the species account on peregrine falcons for the landmark "The Birds of North America" series published jointly by the Philadelphia Academy of Sciences and the American Ornithologists' Union.

- On numerous occasions I have served as a consultant for various private firms and government organizations to produce environmental assessments dealing with peregrine falcons (see curriculum vitae).

4. In addition to my studies of peregrine falcons generally, I and a colleague (Richard Porter) published in 1973 the pioneering and only comprehensive study of peregrines in Utah. This study included an analysis of the factors involved in the competition between peregrine falcons and prairie falcons (a common species of falcons in the west) as well as the decline of peregrine falcons in Utah as a result of synthetic chemicals. Timpie Springs was among those early nesting sites we documented as part of this study. Subsequently, I consulted with the Utah Division of Wildlife Resources on the placement of artificial nesting platforms, based on historical nesting distribution of

peregrines in Utah, during the reintroduction phase of the peregrine falcon in Utah. Timpie Springs had historically been used by peregrine falcons prior to the peregrine nesting cliff at the northern edge of the Stansbury Mountains being torn down for rip rap (big rocks used for roadbed) during the construction of interstate highway I-80. Timpie Springs was selected as a reintroduction site both because of its historical usage by peregrines and because there was a contemporary source of readily available food in the marshes. Peregrines have the most breeding success in areas where there is a high density of local food sources, such as that found in the surrounding marshes of the Timpie Springs Waterfowl Management Area (WMA). (Exhibit 2 to this declaration is a map that shows the location of the Timpie Springs WMA, which is located between Interstate 80 (I-80) and the Great Salt Lake to the north and east of the Timpie Interchange on I-80.)

5. In Contention Utah DD, as admitted,[1] the State of Utah asserts that:

> The Applicant has failed to adequately assess the potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and species in the region as required by 10 C.F.R. §§ 72.100(b) and 72.108 and NEPA in that:
>
> 1. The License Application fails to address all possible impacts on federally endangered or threatened species, specifically peregrine falcons nesting on the Timpie Springs Waterfowl Management Area.
>
> 2. The License Application fails to include information on pocket gopher mounds which may be impacted by the proposal.
>
> 3. The License Application has not adequately identified plant species that are adversely impacted or adequately assessed the impact on those identified, specifically the impact on two "high interest" plants, Pohl's milkvetch and small spring parsley.

[1] Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 204-205 (1998); Memorandum and Order (Memorializing Prehearing Conference Rulings) (May 20, 1998) (rephrasing Basis 1).

4. The License Application does not identify, nor assess the adverse impacts on, the private domestic animal (livestock) or the domestic plant (farm produce) species in the area.

6. The State has further elaborated on its claims in discovery responses that it has provided to Private Fuel Storage (PFS). The State claims that the environmental analysis does not address all possible impacts on peregrine falcons nesting at the Timpie Springs WMA.[2]

7. In this declaration, I will address Basis 1 of Utah DD, the adequacy of the environmental analysis for the PFSF with respect to the assessment of potential environmental impacts on peregrine falcons. I will also address the State's claims of potential adverse impacts on prey species of the falcons due to operation of the facility. As I discuss below, the PFSF will have no adverse health and safety impacts on peregrine falcons nesting in the Timpie Springs WMA, either directly or indirectly through impacts to the peregrines' prey species.

II. THE PRIVATE FUEL STORAGE FACILITY

8. As described in the Draft Environmental Impact Statement (DEIS), the proposed PFSF is an independent spent fuel storage facility to be located in Skull Valley, Utah. The facility is to be located somewhat more than 25 miles to the south of the Timpie Springs WMA. The spent nuclear fuel will be sealed in stainless steel canisters that will arrive at the facility welded shut and will never be opened at the site. At the PFSF, the canisters will be stored in cylindrical shaped concrete storage casks. Electrical power will be provided from a new transformer that would be connected with new lines to an existing distribution line that runs along Skull Valley Road (DEIS 2.1.1.2, 4.4.2.2, page 4-21, lines 17-23, 30-35). Light poles at the facility will be 40 meters (130 feet) tall (DEIS 2.1.1.2, 4.4.2.2, p. 4-22 to 4-23). Because of the distance of the PFSF from Timpie Springs, the lack of any attractive ecological factors that might lure Timpie Spring peregrines over that distance in the first instance, and the nature of the structures

[2] State of Utah's Objections and Response to Applicant's Second Set of Discovery Requests with Respect to Groups II and III Contentions (June 28, 1999) (Discovery Response) at 116-119.

to be constructed at the site, I can not perceive of any aspect of the facility that might increase the likelihood of a peregrine fatality.[3]

9. The storage facility may conceivably attract avian species due to the presence of potential perching and nesting sites provided by light posts, buildings and storage casks (DEIS 4.4.2.2). Additionally, the casks will be warmer than the ambient temperature, potentially attracting avian species in the winter (DEIS 4.4.2.2). However, the design of the facility incorporates several mitigation measures that minimize both the attractiveness of the facility to avian species and the potential effects on avian species that may be in close proximity to the facility. Birds will be deterred from perching or nesting on the casks by active steps to shoo birds away from the site (ER 4.2.2; DEIS 4.4.5.2) and, if necessary, by fitting the casks with devices (such as cones or spikes), that would make perching or nesting on the casks physically impossible (ER 4.2.2; DEIS 4.4.5.2). Additionally, the height of the light posts (130 feet, DEIS 2.1.1.2) and location of buildings assures that dose rates for birds that may nest or perch at those locations are below accepted standards for wildlife exposure (DEIS 4.4.2.2; ER 4.2.2, 4.2.9.2.1).

10. Spent nuclear fuel would reach the facility by one of two alternative means. The preferred option is shipment to the PFSF entirely by rail via a rail line built to connect the PFSF with the existing Union Pacific rail line at Skunk Ridge. This rail line would run southward along the west side of Skull Valley and then eastward across the valley to the site. The second option considered is to build an Intermodal Transfer Point ("ITP") near Timpie, as discussed below, and to haul storage casks by heavy haul trucks from the ITP to the PFSF down Skull Valley Road. I have considered the impact of both alternatives in assessing whether there will be any impact upon peregrine falcons nesting at the Timpie Springs WMA.

11. During construction of the facility, there will be a maximum increase of approximately 560 vehicle trips per day along Skull Valley Road (DEIS 4.5.1.6). There would be no additional vehicle trips on the Skull Valley Road associated with the

[3] I note that the DEIS (4.4.5.2) provides for measures to be taken to mitigate the possibility of raptor fatalities generally which would protect peregrines to the extent that they may occasion the PFSF.

construction of the rail line option, which would be on the western side of Skull Valley (DEIS 5.5.1.1). Independent of either transportation option, the operation of the facility would add 86 vehicle trips per day along Skull Valley Road, a 14.9% greater use of the Skull Valley Road between Iosepa and Interstate 80 (DEIS 4.5.2.6) than the baseline use established in the DEIS. Depending on the transportation option used, nominal additional traffic would occur during operations. If the preferred rail option is used, one rail trip per week would be expected (DEIS 2.1.2.1, 5.7.2.4). If the ITP option is used, an additional eight heavy haul truck trips per week would be expected along Skull Valley Road (DEIS 5.7.2.4).

III. THE LOW RAIL LINE

12. PFS plans to transport SNF from the existing Union Pacific rail line at the north end of the Skull Valley to the proposed PFSF by its preferred alternative, rail. The Low Rail Line would be constructed to run from the facility site to the existing, main rail line at Skunk Ridge, near Low Utah. The distance of the new rail line from Timpie is somewhat greater than 20 miles, putting the line well outside a peregrine's normal expected foraging range if it is nesting at the Timpie Springs WMA. The construction of the new line would temporarily clear 314 hectares along the rail line, with 63 hectares remaining cleared during the operation of the facility (DEIS 2.1.1.3). As discussed below, this habitat is largely cold desert shrub-steppe vegetation that is only marginally used by peregrines, and quite far from the Timpie Springs WMA nesting site.

IV. THE INTERMODAL TRANSFER POINT

13. The Intermodal Transfer Point (ITP) is the point at which spent nuclear fuel would be transferred from railcars to heavy-haul vehicles for transport to the proposed PFSF if that transportation alternative were to be used. It would be located next to the main Union Pacific Rail Line approximately 1.8 miles west of Timpie I-80 Interchange, away from the Timpie Springs WMA, in the area north of I-80 and south of the mainline railroad (DEIS 2.2.4.2, 5.2.1.1). The ITP would include one pre-engineered metal enclosure to house a gantry crane for transferring cargo from rail to truck. Casks do not remain at the ITP, but are transferred directly from the train to heavy-haul trucks for shipment to the PFSF (DEIS 5.7.2.4). The metal enclosure where the cask transfer

would take place would be surrounded by an 8 foot chain link fence to control public access, with a range fence enclosing a buffer area around the enclosure (DEIS 2.2.4.2). The ITP would require the permanent clearing of 4.5 hectares of potential habitat during operation (DEIS 2.2.4.2, 5.3.1.2). Neither the construction nor the operation of the ITP affects any wetlands (DEIS 5.4.2.3).

14. Peregrines are wide-ranging in their selection of prey with perhaps 100 bird species being used as prey in Utah generally and 20-30 being used by the peregrines at the Timpie Springs nesting site. The 4.5 hectares potential prey supporting habitat that would be used by the ITP is mainly shrub-steppe vegetation that would contain local but often scattered populations of such species as horned larks, sparrows, or sage thrashers that could serve as prey for peregrines. While such prey species could certainly provide a minor portion of the diet of the Timpie Springs peregrines, the potential loss of 4.5 hectares of shrub-steppe vegetation habitat is not significant because of the vast amount of such habitat and because wetlands, that are a significant source of peregrine prey, are not impacted.

V. DISCUSSION OF UTAH DD ISSUES

15. In Utah Contention DD, the State asserts that several aspects of the presence of the storage casks at the PFSF have not been addressed in the evaluation of the environmental impacts of the facility. Specifically, the State asserts that environmental analysis does not address: (i) the impact of increased rail and vehicle traffic on peregrine mortality, (ii) the impact on peregrine prey species through increased rail and vehicle traffic, (iii) the impact on peregrine prey species through loss of habitat, including through wild fires, and (iv) the impact of peregrine prey species being exposed to radiation.[4]

16. Since the late 1990s breeding pairs of peregrines nationwide have increased at a rate of 5-10% per year. There are about 1063 known breeding pairs of

[4] See June 28, 1999 Discovery Response at 116-119. The State's witness has indicated that he has failed, however, to postulate any consequences of exposure of those prey species to radiation dose levels described in the DEIS. See Deposition of Frank Howe (April 24, 2001) (Howe Dep.) at 38-40.

peregrines in the lower 48 states and the current estimate of the actual population (including Canada) is 2,500 to 3,000 pairs. In Utah, there are probably some 150 pairs of peregrines based on total known nesting sites. Because of the peregrines overall numbers nationwide, their rate of population increase, the lower levels of chemical contaminants being found in them and their eggs, and their adequate to high reproductive rates, the peregrine falcon was removed from the Federal list of Threatened and Endangered Species in August 1999 (64 Fed. Reg., 46541 (August 25, 1999)).

17. In 1983, a nesting tower was placed at Timpie Springs WMA. The approximate location of this nesting tower is shown on the map at Exhibit 2 to this declaration. As can be seen from the map, this would place it approximately one mile to the northeast of the Timpie I-80 Interchange and approximately one mile north of I-80 itself. At the same time that this nesting tower was placed at Timpie, several other nesting towers were placed around the shores of the Great Salt Lake. All those towers are currently being used successfully for breeding; indeed the reintroduction of the peregrine falcon around the Great Salt Lake has been so successful that other breeding pairs of falcons are now nesting and rearing young around the Lake at locations other than the towers. The Timpie Springs WMA tower was first occupied by a pair of peregrines starting in 1988, with the pair hatching one nestling. Starting in the first part of the 1990s and continuing for a four-year period ending in 1999, however, there was no reproduction at the Timpie Springs nesting tower. In 1999, two young were found.

18. A variety of prey are available to peregrines that may nest at the Timpie Springs WMA, including ducks, terns, sandpipers (especially American avocets, black-necked stilts, common snipe, and Wilson's phalarope), mourning doves, and various songbirds such as western meadowlarks, swallows, and blackbirds. Personally, I have found a cinnamon teal, black-necked stilts, and a blackbird species at the nest there. Others have reported many black-necked stilts and once a snowy plover being consumed by the Timpie Springs peregrines. While the total number prey species available to the peregrines may be 20-30, only a handful of species (those particularly numerous or vulnerable) make up the bulk of the prey that a Timpie Springs WMA peregrine would consume.

A. Potential Impact of Increased Traffic on Peregrine Falcons

19. The State does not disagree with the quantification of increased traffic levels during construction or operation of the PFSF contained in the DEIS, summarized above.[5] The State does contend, however, that the environmental analysis has not adequately addressed or evaluated the impact of increased rail and vehicle traffic on peregrine falcons. Specifically, the State has asserted that increased traffic may cause "nesting falcons to flush from nests and/or foraging perches," decreasing foraging efficiency, leading to possible starvation of nestlings, and increase in possibilities of egg breakage, nest abandonment, or predation by other species on peregrine eggs and/or nestlings.[6] Additionally, the State asserts that the environmental analysis has not "adequately evaluated the effects of construction activities during the breeding season," and has not addressed the potential of falcon fatalities from the increased levels of traffic.[7]

20. As elaborated on below, the State's assertions are belied by the experience of the falcons currently nesting at the Timpie Springs WMA and peregrine falcons elsewhere. The peregrines nesting at the Timpie Springs WMA are within sight of an existing rail line and I-80, both of which have a steady flow of traffic and both of which have become an inherent part of the falcons' environment, as well as a major industrial facility, the Cargill salt processing plant located at the Timpie I-80 interchange. This is clearly shown on Exhibits 3 to 8 which are photographs of the Timpie I-80 Interchange area and the Timpie Springs WMA to the northeast of the Interchange which show I-80, the Union Pacific mainline and the Cargill plant in relation to the Timpies Springs WMA.[8] Accordingly, the minor increase in levels of train or vehicle traffic, as outlined

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[5] Letter from D. Chancellor to P. Gaukler dated March 9, 2001.

[6] June 28, 1999 Discovery Response at 117-118.

[7] Id. at 118.

[8] Exhibit 3 is approximately ½ to ¾ mile to the west of the Timpie I-80 Interchange taken from near the Union Pacific mainline facing toward the interchange and the Cargill plant (and away from the ITP). The Timpie I-80 Interchange can be seen to the right hand side of the picture as well as the knoll at the northern edge of the Stansbury mountains (from which the photographs for Exhibits 5-8 were taken) can be seen. The WMA is on the back side of the Cargill plant. Exhibit 4 is the Cargill plant taken at the junction of the frontage road (which runs just to the north and parallel to I-80) and the access road to the Cargill plant.

Footnote continued on next page

in the DEIS, will have no impact on the peregrines nesting at the Timpie Springs WMA. Further, peregrines nest in regions that have greater levels traffic in closer proximity to the peregrine nests than even that shown on Exhibits 3 to 8 and still maintain viable populations

1. Potential for Direct Fatalities Due to Traffic Increases

21. Peregrines do have collisions with trucks, cars, trains, and even moving agricultural and power generating windmills. The question, however, is not one of whether a falcon might accidentally have a collision, which can happen under the existing conditions of current levels of train and vehicle traffic, but whether such an event has a significant result or effect on current peregrine populations. The answer clearly is that such a rare event would have no effect on peregrine population levels, which is the important issue in maintaining viable breeding populations. Likewise, the increase in vehicular and rail traffic described in the DEIS would not significantly increase the likelihood of such an event.

22. There are no statistics on the frequency of peregrine traffic fatalities within the United States but information regarding the likely cause and lack of significance of such fatalities is available from other parts of the world. Vehicle collision is the greatest single source of current peregrine mortality in Australia now that laws protect peregrines from shooting by humans. This mortality, however, is probably the result of a specific set of circumstances, only indirectly related to the traffic. In Australia, one of the peregrine's primary prey species is the galah cockatoo. These cockatoo have increased in both distribution and numbers over the past few decades with the clearing of

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Footnote continued from previous page

Exhibit 5 is taken from the knoll at the edge of the Stansbury mountains (about a ½ mile to the east and somewhat south of the Timpie I-80 Interchange) overlooking the interchange and the Cargill plant to the northwest. The ITP is off to the left from the picture and the Timpie WMA is off to the right of the picture. Exhibit 6, taken from the same location, is a closer look at approximately the same angle at Cargill plant and the traffic on I-80 and the Union Pacific mainline. Exhibit 7, taken from the same location, is a further back view of the entire Cargill plant and the salt evaporator ponds (pink in color) to the north and east of the plant. Exhibit 8, taken from the same location, shows the view of the Timpie WMA to the east of the Cargill plant. The pink salt evaporator ponds shown on the far right of Exhibit 7 can be seen on the left back of Exhibit 8. The nesting tower is just slightly to the east (right hand side of the photo) (Exhibit 8).

land. Further, they commonly feed on roadsides where spilt grain and other foods can be found. Galahs, in fact, are commonly struck by vehicles themselves. Apparently, peregrines are so intent on pursuing potential prey near a highway that they are hit simply by random chance. The numbers of collisions logically increase as the numbers of galahs feeding on roadsides increase. In spite of these unique facts that make peregrines more susceptible to vehicle fatalities in Australia, peregrines there are a common raptor in Australia, which remains a numerical stronghold for peregrines worldwide.

23. The unique set of circumstances that causes vehicle fatalities of peregrines in Australia does not apply to peregrines nesting at Timpie Springs in that their prey does not commonly feed on nearby roadsides. Because the prey of peregrine falcons at the WMA does not draw them close to the roads, vehicle fatalities would be extremely unlikely and made no more likely by the increase in traffic described in the DEIS. Even in busy urban areas where peregrines now nest (e.g., New York, Los Angeles, Philadelphia, and San Francisco), young and inexperienced falcons appear to suffer greater mortality by hitting windows in buildings, falling into air conditioning units, and so forth than they do from collisions with vehicles. Peregrines, therefore, can and do acclimate to urban and traffic conditions.

24. As stated above, the important issue is the effect of vehicle collisions on peregrine populations. Young, inexperienced falcons would be the most susceptible to such collisions and mortality by collision would most likely occur during the first month after fledging. Conceivably, young peregrines might sit on train tracks or along roadways, but the slight increase in traffic, as outlined in the DEIS, would not create a significant increase in risk over what now occurs from sitting on such places. Moreover, young peregrines usually sit on the nesting tower or on the ground nearby that tower until they develop relatively good powers of flight. Even though the north end of the Skull Valley Road or the rail corridor are within range of young peregrines within a couple weeks of fledging, there is nothing in the ecological situation or environments around the Timpie nest that would attract the young peregrines to those areas or otherwise expose a young peregrine to the risk of a vehicular collision.

2. Potential Traffic Impacts on Nesting and Rearing Young

25. While vehicle and train traffic can have a disturbing effect on nesting falcons given the right set of conditions (which would not be present at the ITP), even military jet aircraft suddenly passing a peregrine nest at close range (experiments in Alaska along the Tanana River) and producing a startling effect on the falcons have not been shown to significantly decrease breeding output or effort. Such traffic (aircraft, car, trains, etc.) would have its greatest impact when it is newly introduced into an otherwise quiet or solitary location. However, the fact that the Timpie Springs peregrines nest near I-80, the Union Pacific mainline, and the Cargill plant as shown on Exhibits 3-8 clearly indicates that they are already acclimated to traffic and that the increase in traffic described in the DEIS essentially would have no effect on their nesting and rearing of young.

26. For example, peregrines have moved into road cuts produced by mining gravel and rip rap from cuts along existing roads in Alaska (such as the Richardson Highway, which is the main arterial highway into Fairbanks). In some cases, nests were only 100 meters from the highway. There is no record of reduced reproduction in those peregrine populations (or for that matter of increased collisions with vehicles). Any negative potential effect would likely show up first in reproduction. Many of the falcons are banded, so their return to a location year after year is tracked. Furthermore, peregrines are visual animals, and unless they can associate a sound with something they see and perceive as a danger, they appear not to be disturbed by that sound. For example, based on numerous personal observations, nesting peregrines in Arctic environments allow helicopters to land near their nests while they are incubating and do not leave the nest until they see humans, which they perceive as a threat, on the ground after leaving the helicopter.

27. Thus, traffic conditions could potentially be detrimental to courtship and breeding only if the falcons are not already acclimated to traffic during any period of the courtship up to the egg-hatching period. Such is not the case with respect to the peregrines nesting at Timpie Springs since the presence of peregrines at that nesting site

means that they are already acclimated to existing traffic on I-80 and the main Union Pacific rail line. Therefore, the increase in traffic described in the DEIS would have no effect on their nesting and rearing of young.

28. Human foot traffic is potentially more disturbing to peregrine nesting and rearing of young than vehicle traffic. During both construction and operation of the ITP, there would be people and activity at the ITP site. However, the distance from the proposed ITP location to the peregrine nest at the Timpie Springs WMA would be too great to be of concern. Indeed, as discussed below, there is greater human foot traffic at the Cargill salt processing plant which is much nearer the nesting tower than the ITP. As stated above, the proposed ITP would be located approximately 1.8 miles west of the Timpie interchange on I-80, whereas the Timpie Springs peregrine nesting tower is located approximately one mile to the northeast of the I-80 Timpie interchange. Therefore, the proposed ITP would be located approximately three miles from the nesting tower. Because of this large distance, there would be no negative impact on the peregrines at the Timpie Springs WMA from activity at the ITP.

29. For example, the flushing of peregrines from their nests (which is only critical when they are incubating eggs or have small young – less than a week old) would not normally occur with respect to activity further than 500 meters from the nest site. This critical distance is far less than the approximately three miles of separation between the proposed ITP and Timpie Springs nesting area.

30. Further, the Timpie Springs nesting area is much closer to the Cargill salt processing plant located near the I-80 Timpie interchange. This is a major industrial facility with trucks arriving and departing the facility on a regular basis and with considerable human foot traffic in addition to the salt processing activity that occurs there. The size of the Cargill plant and activity presented at that location is reflected by the picture of the facility attached as Exhibits 3-7 to this declaration (summarized in note 8 supra. The Timpie Springs WMA, shown in map at Exhibit 2 and the photograph as Exhibit 8, is just to the east northeast of the Cargill plant complex. This plant shares the access road to the Timpie Springs WMA, which abuts the plant property. The Timpie

Springs nesting tower itself is located approximately one mile from the Cargill plant complex. Thus, the lack of any adverse impact from activity at the ITP is self-evident by virtue of the fact that the Timpie Springs falcons already nest in closer proximity to I-80, an existing rail line, and a major industrial facility with vastly higher levels of truck and human foot traffic than the ITP.

3. Potential Traffic Impacts on Foraging

31. Typically, most peregrines hunt within a couple miles of their nest site, often launching directly from the nest site to catch flying prey. While they can travel many miles in a short time and do hunt up to 10-12 miles from their nests over rich prey areas, such forays usually occur because the nest is located some distance from abundant prey sources. For example, peregrines that once nested on the Wasatch Front flew regularly 10-12 miles to marshes along the Great Salt Lake and Utah Lake to hunt.

32. Peregrines at Timpie Springs probably conduct the great majority of their hunting forages over the marshes surrounding the nest. The prey species of the peregrines at Timpie Springs that have been examined (e.g., ducks, shorebirds, etc.) are not generally birds of the desert but of wetlands. There is no reason to believe that the Timpie Springs falcons would travel to non-wetland areas to hunt given the high density of prey species in the Timpie Springs WMA wetlands. Because there are wetlands adjacent to the northern end of the Skull Valley Road, they may conceivably hunt there. However, peregrines are creatures of habit and they will continually return to the same hunting areas on a daily basis as long as they are successful in obtaining prey. Therefore, there is no reason to believe that the falcons would fly over the rail line and I-80 to hunt near the Skull Valley Road where the density of prey items are many times lower than they are near their nest at Timpie Springs or in a north, east or west direction from the nest.

33. Further, traffic by itself would not deter peregrines from pursuing their prey. Indeed, peregrines sometimes "shadow" helicopters, cars, and trains. In other words, falcons use such objects to conceal themselves by flying alongside, as they approach prey, in order to catch the prey "off guard." In fact, one reason peregrines are

used in the sport of falconry is because wild falcons will also fly above humans on foot waiting for the human to flush a prey item. Peregrines are thus "pre-adapted" to hunt above the falconer. They often catch the prey item just a few feet from the human. For example, when I recently released a banded longspur, it was caught immediately in front of me by a peregrine that had been flying above me, which I had not seen. Likewise, peregrines have been known to fly in and catch a recently wounded duck only feet from the duck hunter. Thus, any increase in traffic caused by the PFSF or the ITP would not negatively impact foraging of the Timpie Springs falcons.

34. In sum, based on the locations of the PFSF and ITP and their distances from the peregrines' nest at Timpie Springs, I conclude that the potential for adverse negative impact to the Timpie Springs falcons from traffic related to the construction and operation of these facilities is essentially non-existent. This conclusion applies to nesting success, accidental mortality of young or adults by increased traffic, and to prey species. It is self evident that if the peregrines are not affected by the existing conditions resultant from I-80, the rail line, and the Cargill plant complex the increase in traffic that would result from the PFSF and the ITP could not have a significant effect and is a non-issue.

B. The Potential Impact on Peregrine Falcon Prey Species

35. The State also claims that the PFSF and the ITP, and related traffic, could adversely impact peregrine falcon prey species, thereby having a negative effect on the Timpie Springs peregrines.[9] However, for many of the same reasons discussed above, the Timpie Springs peregrines would not be so adversely affected.

1. <u>Impact of Traffic Increases on Peregrine Falcon Prey Species</u>

36. Based on studies of peregrine food habits in the Great Salt Lake ecosystem, there are, at a minimum, 35 species of birds, several bats, and at least two voles that might provide food to peregrines. In one study where peregrines fed along the shores of the Great Salt Lake, 107 food items were identified consisting of at least 26 bird

[9] June 28, 1999 Discovery Response at 118.

and 5 mammal species. However, the study found that four species made up more than 50% of the peregrines food supply. These were the willet, American avocet, mourning dove, and western meadowlark. Based on a) this study, b) random prey remains found at nesting towers along the Great Salt Lake, including the Timpie Springs nest, and c) the species diversity at Timpie Springs, potential prey species for the Timpie Springs falcons would include at least 6 species of ducks, 2 species of grebes, snowy egrets, white-faced ibis, 2 species of rails, coots, killdeers, willets, American avocets, black-necked stilts (probably the most commonly taken species based on one sample from the Timpie Springs nest), common snipes, Wilson's phalaropes, Franklin's gulls, Forester's terns, mourning doves, common nighthawks, western kingbirds, 3 species of swallows, sage thrashers, horned larks, Brewer's sparrows, western meadowlarks, Brewer's blackbirds, red-winged blackbirds, and yellow-headed blackbirds. The list of potential prey species could be further expanded to include all birds that occur in that region, but other species would likely not represent a significant percent of the food. Individual peregrines often specialize on a few species and seem to go out of their way to catch those species. As individual peregrines at a nest die and are replaced by new peregrines, the proportions of prey species may shift. But, the stable species are listed above and prey tends to be taken relative to abundance or vulnerability.

37. Given the numerous prey species available to peregrine falcons nesting at Timpie Springs and, as discussed above, the abundance of prey species in the marshes of the WMA (away from I-80), any increase in road kill of prey due to the increased traffic levels described in the DEIS would have no adverse impact on the viability of the Timpie Springs falcons.

38. The State's witness, Dr. Howe, places great emphasis on the California gull as a peregrine prey species and expresses concern over the effect of increased vehicular fatalities of gulls caused by the PFS project – specifically, increased rail traffic. Howe Dep. at 43. With few exceptions, however, that species is seldom taken by peregrines around the Great Salt Lake, because, among other reasons, adult California gulls are nearly the size of peregrines. One exception is that of peregrines nesting on Gunnison Island in the Great Salt Lake do prey on baby California gulls. However, on

that island there is a large colony of California gulls and the only other bird present in any number is the white pelican. Baby gulls are, therefore, frequently taken by peregrines nesting there, and in fact made up the bulk of the prey remains in the nest that I visited on the island three years ago. It is dangerous, however, for peregrines to prey on gulls because gulls at colonies tend to mob intruders, especially predators.

39. The California gull colony that Dr. Howe spoke of during his deposition (with respect to which he raised concerns about increased vehicular fatalities of gulls) is many miles to the east of the Timpie nest and is alongside of I-80. I travel that route many times a year and seldom, if ever, see road-killed gulls. Those that I do see are usually fledgling birds or young that have wandered from the colony to the highway. In any event, the implicit claim that vehicular fatalities of California gulls pose a threat to the peregrine falcon's prey base is belied by the fact that California gulls continue to expand both in range and numbers. So the issue of vehicular fatalities to California gulls is not relevant to the question of peregrine falcons. Part of the reason gulls are seen dead is simply a factor of probability – the greater the population of a species the greater the risk of individual fatalities.

40. Franklin's gulls, about half the size of the California gull, are frequently taken as prey by peregrines. These gulls, however, live in colonies deep in wetlands on more-or-less floating vegetation rather than on exposed islands, as do California gulls, and would not be subject to vehicular fatalities. Further, numerous wetland areas are immediately adjacent to I-80 east of Timpie Springs and they abound with black-necked stilts and American avocets. These are seldom, if ever, seen as road-kills along that portion of the interstate even though they forage within 10-15 meters of I-80. Thus, Dr. Howe's expressed concern about vehicular fatalities of prey species having an adverse impact on the Timpie Springs falcons' source of food is highly exaggerated based on the existing data base. As stated above, the numerous prey species available to peregrine falcons nesting at Timpie Springs and the abundance of prey in the adjacent marshes make loss of potential prey through vehicular fatalities a non-issue.

2. <u>The Potential Impact on of Loss of Habitat on Peregrine Prey Species</u>

41. As described above, the habitat that would be permanently lost to the ITP would be 4.5 hectares of mainly shrub-steppe type vegetation. Similarly, the habitat permanently lost to the Low Rail Line (as well as the PFSF itself) is likewise largely cold desert shrub-steppe type vegetation that is only marginally used by likely peregrine prey species. No wetlands, the primary habitat for the most common peregrine prey species, would be lost or affected.

42. Because new construction will only clear cold desert shrub-steppe type vegetation, there will be essentially no adverse effect on peregrines at Timpie Springs. While peregrines may use such habitat for foraging, it would only be an occasional foray into the affected area from Timpie Springs because of the lower prey densities there and the distance to such areas.

43. Further, the amount of habitat lost, as described in the DEIS, is not a statistically significant amount relative to the total available habitat. Therefore, any minimal loss of a rarely accessed, potential prey base would not be statistically or biologically significant to the peregrines. Peregrines may be wide-ranging and have a catholic, or universal, diet, but the presence of more abundant, wetlands prey in close proximity of their nesting area makes the loss of such habitat a non-issue.

3. Potential Impact of Increases in Wildfires on Prey Species

44. The State also suggests that the Timpie Springs peregrine falcon prey base may be adversely affected by wildfires along the proposed route of the Low Rail Line.[10] Again, this is a non-issue with respect to the Timpie Springs peregrines in that there is no reason to believe, for the reasons previously stated above, that the peregrines at Timpie Springs would use such habitat for foraging to any significant degree, so such fires would not have a significant affect on them. In this respect, wildfires are already a common

[10] State Of Utah's Objections And Response To Applicant's Sixth Set Of Discovery Requests To Intervenor State Of Utah (February 28, 2001) at 48.

occurrence in Skull Valley with no discernable adverse impact on the Timpie Springs falcons.

4. Potential Impact on Peregrines Through Exposure of Prey Species

45. Finally, the State has claimed earlier that the Timpie Springs peregrines might be adversely affected by exposure of prey species to radiation from the PFSF.[11] Because the impact of radiation is no longer of concern to the State,[12] I will not discuss here the potential for such exposure to prey species at the PFSF or the potential adverse effects to the prey species so exposed or to peregrine falcons should they feed on such prey. Rather, I limit my discussion to the extent to which prey species are likely to be present in the environs of the PFSF and the likelihood that these species would be a source of food for the Timpie Springs falcons.

46. The presence of potential prey species at the PFSF itself would depend on what vegetation is present at the facility once construction is complete. If the site is revegetated with native vegetation as described in the DEIS 4.4.1.1and 4.4.5.1, then the list of possible prey species nesting at the actual PFSF might be the horned lark, Western meadowlark, sage thrasher, lark sparrow, and perhaps Brewer's sparrow. Also, habitat nearby the facility may be suitable for black-billed magpies which are a source of prey for peregrines. If exotic vegetation (cheat grass, etc.) revegetates the PFSF area – in the event of an unsuccessful revegetation effort, as described in the DEIS – fewer prey species would inhabit the area (because of the more sterile nature of such vegetation), but certainly horned larks would be one such species. Except for horned larks, or in the case of wet years the Brewer's sparrow, the other species mentioned above would not nest in dense populations. Thus, even if there were greater nesting concentrations of those species than are currently there, the PFSF would not be an attractive hunting area for peregrine falcons.

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[11] See June 28, 1999 Discovery Response at 119.

[12] See Howe Dep. at 37-38.

47. The more relevant question is whether the falcons would go that far to hunt. The probability of a breeding peregrine going the 25 plus miles to the PFSF to forage is extremely remote given that they have an abundant food source near at hand. Once young are independent, it is possible that they would venture that far during post-fledging dispersal or during possible southward migrations in the autumn. Adults in migration might also be occasionally present in the vicinity of the PFSF. However, such presence of peregrines in the vicinity of the PFSF would be both random and transitory, and hence not significant.

48. Further, I have reviewed the mitigation measures listed in the DEIS to keep prey species away from the PFSF, described in paragraph 9 above, and they seem adequate and are based on sound ideas.

49. Even if it is assumed for purpose of argument that prey species may nest in greater density at the PFSF than they otherwise would in the same habitat (an incorrect assumption), the PFSF is still too distant from the Timpie Springs WMA to be attractive to peregrines for foraging. This would hold true even if the prey base at Timpie Springs were, for some unimaginable reason, significantly reduced to levels to make the hypothesized increased density of prey species at the PFSF attractive. The prey species that might nest at the PFSF would be a small "prey package" in terms of energy (i.e., small energy gain for the energy expended in travel). Even if a peregrine falcon were to successfully hunt and feed on more than one occasion near the PFSF, this would not be enough sustenance to allow the falcon to breed successfully.

50. The only documented location where peregrine falcons consistently use such small birds as their prey base is Greenland. Greenland, however, is unique in the density of that small prey base, which are so dense that peregrines there often hunt walking on the ground to capture nestlings of the prey species. This density of prey base allows the peregrines to successfully forage on those small species, whereas they are not able to exclusively live off such small species in other locations around the world.

51. The density of prey species nesting at the PFSF would also be dependent on the availability of a nearby food source for those species. For example, if high density prey species, such as bank or cliff swallows, were to nest in concentrations at the PFSF, there would need to be some ecological change or addition, such as open water, to provide a food source for the swallows. While barn and rough-winged swallows could nest at the PFSF without such a water source, those species are solitary nesters, and thus will not constitute dense populations. Neither is it likely that prey species that might nest at the PFSF will travel far enough to enter the normal foraging range of a peregrine at Timpie Springs. Prey species of the small, passerine size simply do not forage more than a few miles from their nesting sites, making it impossible for them to enter any of the foraging areas that the Timpie Springs peregrines are more likely to use.

52. For all these reasons, prey species living in the vicinity of the PFSF would constitute, at most, a small, insignificant fraction of the diet of the Timpie Springs peregrine falcons.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on June 28, 2001.

Clayton M. White

Clayton M. White

EXHIBIT 1
White Declaration

PROFESSIONAL DOSSIER

(Updated January 2001)

Name: Clayton M. White

Title: Professor of Zoology

Birthdate: April 19, 1936

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Married: Merle Tanner, 1959
(5 children)

Social Security #:

Academic Record:

Institution and Location	Degree	Scientific Field	Dates Attended
University of Utah, Salt Lake City	B.A.	Zoology	1954-56; 1958-60
University of Utah, Salt Lake City	--	Graduate Work	1961-62
University of Alaska, College		Graduate Work	1962-63
University of Utah, Salt Lake City	Ph.D.	Zoology	1963-65; 1967-68

Employment Record:

University of Utah, Assistant Curator and Teaching Assistant, 1959-1962; 1963-1965.
University of Alaska, Teaching Assistant, Curatorial work at Museum, 1962-1963.
University of Utah, Laboratory and Teaching Assistant and Diener, College of Medicine, Department of Pathology, 1965, 1966-1968.
University of Kansas, Instructor and Acting Curator of Ornithology, 1965-1966.
Cornell University, Instructor and Research Fellow 1968-1970.
Brigham Young University, Assistant Professor, 1970-1974.
Brigham Young University, Associate Professor, Curator of Ornithology, 1974-1978.
U.S. Energy Research and Development Administration, Vertebrate Ecologist (Tec. Rep), Division of Biomedical and Environmental Research, Program Headquarters, Washington D.C., 1975-1976.
Brigham Young University, Professor and Curator of Ornithology, 1978-present.

Other:

Boise State University, Adjunct Professor of Zoology, 1988-present

Professional Experience: (see also under Public Relations)

Summer employee, Ecologist, Ornithologist and Botanist, University of Utah Floral and Fauna Investigations, Flaming Gorge Reservoir Basin, 1959.

Summer employee, Ecologist and Ornithologist, University of Utah Floral and Faunal Investigations, Navajo Reservoir Basin, 1960.

Research and Field Assistant, "Birds of Utah" under William H. Behle, University of Utah, 1961-62.

Field and Laboratory Assistant, Physiology and Systematics of Redpolls, under B. Kessel, University of Alaska, 1962-63.

Field Technician, Physiology of Ptarmigan under George West and Lawrence Irving, Laboratory of Zoophysiology, Institute of Arctic Biology, University of Alaska, Summer 1964.

Associate Investigator, with T. Cade on Grants from U.S. Fish and Wildlife and Arctic Institute of North America, "Peregrines and Pesticides in Alaska," Yukon River (1966), Colville River (1967-69).

Associate Principle Investigator, "Ecology of Cliff Nesting Birds in Alaska," U.S. IBP Tundra Biome, 1971-72.

Associate Investigator with F. S. L. Williamson, Smithsonian Institution, "Avifauna Investigation of Amchitka Island, Alaska," Funds from U.S. AEC and Battelle Laboratories, 1969-1974, for the underground nuclear testing program.

Consultant, Battelle Memorial Institute Columbus Labs, Impact of Gas pipelines on Gulf Coast of Louisiana and Arctic Slope of Alaska, 1972-1975.

Consultant, General Research Corporation, Environmental Studies of Nevada Continental Operation Range, 1974, for low level supersonic military flights.

Special Temporary Employee and Observer, U.S. Fish and Wildlife, "Impact of Alaska Pipeline; Impact of Alaskan Reservoir Basins; and Reintroduction of Endangered Species in Alaska," Summers, 1970, 1972, 1974, 1975.

Invited Senior Researcher, Victoria Fisheries and Wildlife Division, Victoria, Australia, Sept.-Nov. 1976, Sept-Nov, 1977, Oct-Nov, 1978, Work on "Population Dynamics of Australian Raptors."

Project Leader, June-Aug. 1977, "Ecological Profile of Raptors and their habitat in western Alaska," for BLM, Alaska office, a study of endangered species for the D-2 lands in the Alaskan Native Lands Claims Settlement Act.

Consultant, Vaughn Hansen Associates, "Endangered Species and Coal Development in Utah." 1977-1980.

Consultant, Dow, Lohnes and Albertson Law Offices and Pittston Oil Co., "Endangered Species and the Eastport, Maine Refinery," 1978-79.

Consultant, Coastal States Energy Co., "Endangered species, birds and energy development." 1979-1982.

Principal Investigator, "The Effects of Geothermal Development on Ferruginous Hawks," Department of Energy funds thru EG&G, Idaho, and U.S. Fish and WildLife Service, 1978-1980.

Member, Scientific Advisory Committee, On Potential Impact of Space Shuttle Sonic Booms on the Biota of the California Islands, Hubbs/Sea World Research Inst., 1978-1979.

Co-investigator, "Peregrine falcon nesting habitat survey on the Six Rivers, Mendocino, Klamath, and Shasta - Trinity Nat'l. Forests," U.S. Forest Service, 1979.

Co-investigator, "A survey of North American Migrant Peregrine Falcons in South America," U.S. Fish and Wildlife Service project, 1979-80, work in Argentina, Brazil and Peru.

Co-investigator, "Peregrine falcon nesting habitat survey on U.S. Forest Service lands along the west slope of the Sierra Nevada Mountains - 1980" and "Fremont National Forest, Oregon," U.S. Forest Service, 1980.

North American Coordinator, Bird of Prey World Working Group, International Council for Protection of Birds, International Union for the Conservation of Nature and Natural Resources, Morges, Switzerland, 1979-present.

Co-investigator, "Evaluation of Warner Valley, Oregon for reintroduction of nesting peregrine falcons," U.S. Bureau of Land Management, May 1982.

Co-investigator, "Effects of Carbofuran Pesticide Formulations on Birds in Corn and Alfalfa", F.M.C. Corporation, 1982.

Consultant, Bechtel Group, Inc., "Survey of Endangered Species at Gibson Dome and Elk Ridge study areas, Paradox Region, Utah" for siting of underground nuclear waste dumps, 1982, 1983, and 1985.
Consultant, Bechtel Group, Inc., "Threatened and Endangered Species Along the Proposed CO_2 and Phosphate Slurry Pipeline, Wyo., Utah and Colo." for the Chevron Corporation, 1984-1985.
Consultant, Utah Department of Transportation, Assessment of endangered species along highways, on retainer, 1984-present.
Member of exchange team/workshop on Bird Banding with U.S. Fish Wildlife Service, to the Peoples Republic of China, 1988.
Participant, U.S./U.S.S.R. Enrivonmental Exchange Program, U.S. Fish Wildlife Service, to Kazakhstan, S.S.R., Summer 1991.
Expert Witness, Exxon Company, U.S.A., on Exxon Valdez Gulf of Alaska (Prince William Sound) oil spill, and consultant, Alaska Biol. Res. Inc., 1989-1992.
Consultant, Lockheed Environmental Services Division, Las Vegas, NV., on EPA's EMap Arid Field Study, 1994.
Consultant, Baseline Data, Inc., Salt Lake City and Orem, UT., on WestDavis/Lagacy Highway development, Davis and Salt Lake Counties, UT., 1997-1998.

Teaching Experience:

Brigham Young University (1970 to present)

Honors 211R, 221R, 241R: Shaping the Modern Mind. Colloquium in Arts, Letters, and Sciences. Team taught.
Biology 200: General Biology for Zoology majors. Team taught. I taught ecology, evolution and animal diversity.
Zoology 203: Vertebrate Zoology. Diversity and evolution of vertebrates.
Zoology 204: Animal Diversity. Team taught. I taught vertebrate portion on structure, function, and evolution.
Zoology 334: Nature Study Methods. Natural history for primary education majors.
Zoology 344: Natural History of Wildlife
Zoology 446: Ornithology. Ecology, natural history and evolution of birds.
Zoology 475: Evolutionary Science. Team taught. Organic evolution. I taught evidence portion using radiometric dating, fossil record, biogeography, anatomy, and biochemical evidence.
Zoology 549R: World Bird Families. A survey of birds of the world using museum specimens.
Zoology 549R: Raptor Biology. The ecology and natural history of birds of prey.
Zoology 601: Zoogeography. Study of the distribution of animals as explained by historical data and contemporary theory.
Seminar on Conservation Biology. Team taught.

Cornell University (1968-1970)

Vertebrate Zoology: Team taught. I taught portion on birds.
Ornithology: Biology of birds.

University of Kansas (1965-1966)

Biogeography: Team taught. Distribution of life on earth.
Tropical Biology: Team taught. I taught bird portion of tropical species.

Ornithology: Biology of birds.

University of Alaska (1962-1963)

General Zoology: Teaching and laboratory assistant.
Ornithology: Teaching and laboratory assistant, Assistant curator.

University of Utah (1959-1962, 1964-1965, 1966-1968

Pathology: Teaching assistant at medical school for 2nd year medical students.
Ornithology: Teaching assistant.
Vertebrate Natural History: Teaching assistant.

Boise State University (1989)

Seminar: Raptor Biology and Evolution (Fall quarter)

Research Activities: (past and present)

See also Professional Experiences for many of the activities:

(l) U.S. Forest Service, "Raptors in the Uinta Forest," 1972-75. $3,000 per year. (2) U.S. Fish and Wildlife, "Peregrine Survey of Utah and Central Nevada 1972-74. $4,000. (3) Seabird/Plutonium Contamination Study, Thule, Greenland, AIBS-ERDA, 1975, $4,200. (4) Victoria Fisheries and Wildlife, Australia, "Raptor Populations." 1976, $4,800, 1977, $5,200. (5) E. G. and G., "Bird studies at Raft River Geothermal site." Summer, 1977-1979, $35,000. (6) Ecological relationships of vertebrates to spruce budworm control and forest management practices, U.S. Forest Service, $25,000. (7) Peregrine falcon survey of Northern California National Forests, U.S. Forest Service, 1979, $34,000. (8) Gas pipelines and bald eagles, Northwest Pipeline Co., 1979, $4,000. (9) Migrant North American Peregrine Falcons in South America, U.S. F.W.S., 1979-80, $50,000. (10) Peregrine Falcon Survey, Sierra Nevada Mountains, California and Southern Oregon, U.S. Forest Service, 1980, $30,000. (11) Raptors of the proposed MX regions, Utah and Nevada, HDR Sciences, 1980, $12,000, 1981, $12,000. (12) Endangered Species on Proposed Nuclear Waste Dump Sites, Bechtel Group, Inc., 1982, $13,000, 1983, $12,000, 1985, $8,000. (13) Endangered Species and Raptors along the CO_2/Phosphate Pipeline, Bechtel Group and Chevron Corporation, 1984-85, $43,000. (14) Endangered Species, UDOT, 1984-1989, $20,000. (15) Biology of Peregrine Falcons in the Fiji Islands, Chemtronics, Inc., San Diego, CA, 1985-1991, $71,000. (16) Goshawk studies, Dixie Nat'l Forest, 1991, $21,000, 1992, $16,000. (17) Preliminary investigations of the "Altay (Altai)" Falcon, USSR (Khazakstan and southern Russia), Trust for Mutual Understanding, $ 17,000, 1991. (18) Goshawk Studies, Ashley Nat'l Forest, 1992, $12,000. (19) Endangered Species, Katami Nat'l Park, Alaska, 1993, $51,000, (20) Biology of Peregrine Falcons in Fiji and Vanuatu, Dan Brimm, San Diego, CA, 1992-93, 1996-98, $71,000, (21) The Mountain Plover in the Uintah Basin, Utah Div. Wildl. Res. and USBLM, 1996, $ 14,300, 1997, $17,000, 1998, $15,000. 1999-2000, $15,000. (22) Possible impact on flammulated owls from the Winter Olympics development at Snow Basin, UT., $ 21,000. (22) Northern Goshawk movements as determined by satellite telemetry, U.S. Forest Service, 2000-01, $ 110,000.

Research Interests: (1) Plastics in stomachs of Sea Birds, (2) Winter Lipid Deposition in Arctic Finches (3) DDE in the Birds of Utah Lake Ecosystem (in conjunction with Utah Board of Health), (4) Ecology of Peregrine Falcons in Alaska, (5) Birds of Aleutian Islands, Alaska, (6) Captive Breeding of Peregrine Falcon, (7) Australian Raptors. (8) Spatial Patterns in Linear Distributed Raptors of the Green River. (9) Nesting relationship of Buteo in juniper forests. (10) Biochemical systematics of the family Falconidae. (10) Biogeography and distribution of Falconiformes. (11) Biology and Evolution of Island Birds (South Pacific). (12) Environmental impacts from human activity on the breeding biology of raptors.

Publications and Writings:

Books -- Editor:

Murphy, J. R., **C. M. White**, and B. E. Harrell. (eds). 1975. Population Status of Raptors. Raptor Res. Report No. 3. Vermillion, South Dakota, 232 pp.

Senner, S. E., **C. M. White**, and J. R. Parrish (eds.). 1986. Raptor conservation in the next 50 years. Raptor Res. Report No. 5, Provo, Utah, 87 pp.

Cade, T. J., J. H. Enderson, C. G. Thelander, and **C. M. White** (eds.). 1988. Peregrine Falcon Populations: Their Management and Recovery. The Peregrine Fund Inc., Braun-Brumfeld, San Francisco, California. 949 pp.

Chapters in Books:

White, C. M. 1975. Studies on peregrine falcons in the Aleutian Islands. In: J. R. Murphy and **C. M. White** (eds), Population Status of Raptors. Raptor Res. Report No. 3, Vermillion, South Dakota. pp. 33-50.

White, C. M. and R. W. Risebrough. 1977. Polychlorinated biphenyls in the ecosystems, Ch. 25, pp. 615-625. In: M. L. Merritt and R. G. Fuller (eds), The Environments of Amchitka Island, Alaska. U.S. ERDA., TID-26712 Oak Ridge,Tennessee.

White, C. M., F. S. L. Williamson and W. B. Emison. 1977. Avifaunal investigations, Ch. 11, pp. 227-260. In: M. L. Merritt and R. G. Fuller (eds), The Environments of Amchitka Island, Alaska. U.S. ERDA., TID-26712 Oak Ridge, Tennessee.

White, C. M. 1982. Food and other habits in relation to the evolution of the peregrine falcon in Alaska, pp. 174-186. In: W. H. Ladd and P. F. Schempf (eds) Raptor Management and Biology in Alaska and Western Canada. Proc. FWS/AK/PROC-82, Anchorage, Alaska.

White, C. M. 1987. The peregrine: systematics and evolution. pp. xii-xxx. In:R. D. Porter, A. Jenkins, and A. Gaski (eds). Working bibliography of the peregrine falcon. Nat. Wildl. Fed. Sci. Tech. Ser. No. 9. Wash. D.C.

Boyce, D. A., Jr. and **C. M. White**. 1987. Evolutionary aspects of Kestrel Systematics: a scenario. pp. 1-21. In: D. M. Bird and R. Bowman (eds.). The Ancestral Kestrel, Raptor Research Reports No. 6, Raptor Res. Found., Inc.

Ambrose, R. E., R. J. Ritchie, **C. M. White**, P. F. Schempf, T. Swem, and R. Dittrick. 1988. Changes in the status of peregrine falcon populations in Alaska, pp. 73-82. In: Cade, T. J., et al. (eds.), Peregrine Falcon Populations: Their Management and Recovery. The Peregrine Fund, Inc., Boise, Idaho.

McNutt, J. W., D. H. Ellis, C. P. Garat, T. B. Roundy, W. G. Vasina, and **C. M. White.** 1988. Distribution and status of the peregrine falcon in South America, pp. 237-249. In: T. J. Cade, et al. (eds.), Peregrine Falcon Populations: Their Management and Recovery. The Peregrine Fund, Inc., Boise, Idaho.

White, C. M., D. J. Brimm, and F. Clunie. 1988. A study of peregrines in the Fiji Islands, South Pacific Ocean, pp. 275-287. In: T. J. Cade, et al. (eds.), Peregrine Falcon Populations: Their Management and Recovery. The Peregrine Fund, Inc., Boise, Idaho.

White, C. M. and D. A. Boyce, Jr. 1988. An overview of peregrine falcon subspecies, pp. 789-810. In: T. J. Cade, et al. (eds.), Peregrine Falcon Populations: Their Management and Recovery. The Peregrine Fund, Inc., Boise, Idaho.

White, C. M., D. A. Boyce, and R. Straneck. 1989. Observations of Buteo swainsoni in Argentina, 1984; with comments on food, habitat alteration and agricultural chemicals, pp. 79-87. In B-U Meyburg and R. D. Chancellor (eds.), Raptors in the Modern World, Proc. 3rd World Conf. Birds of Prey, Eilat, Israel, 1987.

White, C. M., R. W. Risebrough and S. A. Temple. 1989. Observations on North American breeding peregrines (Falco peregrinus) on the non-breeding grounds in South America, pp. 89-93. In B-U Mayburg and R. D. Chancellor (eds.), Raptors in the Modern World, Proc. 3rd World Conf. Birds of Prey, Eilat, Israel, 1987.

Longmire, J. L., R. E. Ambrose, N. C. Brown T.J. Cade, T. Maechtle, W. Seegar, F. Ward, and **C. M. White**. 1991. Use of sex-linked minisatellite fragmets to investigate genetic differentiation and migration of North American populations of the peregrine falcon *Falco peregrinus*. pp 217-229. In T. Burke, G. Dolf, A.J. Jeffreys and R. Wolff (eds). DNA Fingerprinting Approaches and Applications, Birkhauser Verlag, Basel, Switzerland.

White, C.M., J.R. Parrish, D.J. Brimm and J.L. Longmire. 1993. Aspects of variation between peregrine falcons: a review with emphasis on Southern Hemisphere populations. pp.13-24, In: P. Olsen (Ed.), Proc. Australian Raptor Studies, Royal Australian Ornithologists' Union, Melbourne, Australia

Emison, W.B., W.M. Bren and **C.M. White**. 1993. Influence of weather on the breeding of *Falco peregrinus* near Melbourne. pp.26-32, In: P. Olsen (Ed.). Proc. Australian Raptor Studies, Royal Ornithologists' Union, Melbourne, Australia.

White, C.M., P.D. Olsen, and L.F. Kiff. 1994. Family Falconidae, pp. 216-247. in: J. del Hoyo, A. Elliott, and J. Sargatal, (eds.), Handbook of the Birds of the World, Vol. 2, New World Vultures to Guinaefowl. Lynx Edicions, Barcelona, Spain.

White, C.M., R.J. Ritchie, and B.A. Cooper. 1995. Density and productivity of bald eagles in Prince William Sound, Alaska, after the *EXXON VALDEZ* oil spill, pp. 762-779. in P.G. Wells, J.N. Butler, and J.S. Hughes (eds.). Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters. ASTM STP 1219, American Soc. Testing and Materials, Philadelphia, PA.

White, C.M., and L.F. Kiff. 1998. Language use and misapplied, selective "science;" their roles in swaying public opinion and policy as shown with two North American raptors. pp. 547-560. In B-U. Meyburg, R.D. Chancellor and J.J. Ferrero (eds.). Holarctic Birds of Prey, Proc. 5th International Conf., World Working Group of Birds of Prey, Badajoz, Spain.

Enderson, J.H., **C.M. White**, and U. Banasch. 1998. Captive breeding and releases of peregrines, *Falco peregrinus* in North America. pp. 437-444. In. B-U. Meyburg, R.D. Chancellor, and J.J. Ferrero (eds.). Holarctic Birds of Prey, Proc. 5th International Conf., World Working Group of Birds of Prey, Badajoz,. Spain.

White, C.M. and L.F. Kiff. 2000. Biodiversity, island raptors and species concepts. pp. 633-652. In. R.D. Chancellor and B.-U. Meyburg (eds.). Raptors at Risk. Proc. V World Conf. Birds of Prey and Owls, Midrand, Johannesburg, South Africa, 4-11 Aug 1998. Hancock House, Surrey, B.C., Canada.

Anderson, C.M. and **C.M. White**. 2000. Recent observations on peregrine falcons *Falco peregrinus* on of Cape Verde Islands, Atlantic Ocean. pp. 685-689. In. R.D. Chancellor and B.-U. Meyburg (eds.). Raptors at Risk. Proc. V World Conf. Birds of Prey and Owls, Midrand, Johannesburg, South Africa, 4-11 Aug 1998. Hancock House, Surrey, B.C., Canada.

White, C.M., D.J. Brimm and J.H. Wetton. 2000. The peregrine falcon Falco peregrinus in Fiji and Vanuatu. pp. 707-720. In. R.D. Chancellor and B.-U. Meyburg (eds.). Raptors at Risk. Proc. V World Conf. Birds of Prey and Owls, Midrand, Johannesburg, South Africa, 4-11 Aug 1998. Hancock House, Surrey, B.C., Canada.

Article -- Peer Reviewed and others:

White, C. M. and W. H. Behle. 1960. Birds of Flaming Gorge Reservoir Basin, Utah and Wyoming. Anthro. Papers, University of Utah 48:186-208.

White, C. M. and W. H. Behle. 1961. Birds of Navajo Reservoir Basin in Colorado and New Mexico, 1960. Anthro. Papers, University of Utah 55:130-51.

White, C. M. and G. D. Lloyd. 1962. Predation on peregrines by ringtails. Auk 79:277.

White C. M. 1962. Prairie falcon displays accipitrine and circinine hunting methods. Condor 64:439-440.

White, C. M. 1963. Botulism and myiasis as mortality factors in falcons. Condor 65:442-443.

Richards, G. L. and **C. M. White**. 1963. Notes on the common crow in Utah. Condor 65:530-531.

White, C. M. 1963. Unusual behavior of the northern shrike. Wilson Bull. 75:459-460.

Behle, W. H., J. B. Bushman, and **C. M. White**. 1963. Distributional data on uncommon birds in Utah and adjacent states. Wilson Bull. 75:450-456.

White, C. M. and W. H. Brooks. 1964. Additional bird records for interior Alaska. Condor 66:308.

Kessel, B., H. K. Springer, and **C. M. White**. 1964. June birds of the Kolomak River, Yukon-Kuskokwim Delta, Alaska. The Murrelet 45(3):37-47.

White, C. M. 1964. Comments concerning Alaskan peregrine and gyrfalcon populations. J. North American Falconry Assoc. 3(1):9-11.

White, C. M. and H. K. Springer. 1965. Notes on the gyrfalcon in Western Coastal Alaska. Auk 82:104-105.

White, C. M., G. D. Lloyd and G. L. Richards. 1965. Goshawk nesting in upper Sonoran of Colorado and Utah. Condor 68:269.

White, C. M. 1965. Roadside raptor count through Utah, Colorado and Kansas. Bull. Kansas Ornithological Soc. 16:18-19.

Welch, F. and **C. M. White**. 1965. Two owls with potential in falconry. J. North American Falconry Assoc. 4:15-17.

White, C. M. 1966. Notes on food of Swainson's Hawk. Bull. Kansas Ornithology Soc. 17(1):10.

West, G. C., and **C. M. White**. 1966. Range extensions and additional notes on the birds of Alaska's Arctic Slope. Condor 68:302-304.

White, C. M. and R. B. Weeden. 1966. Hunting methods of gyrfalcons and behavior of their prey (Ptarmigan). Condor 68:517-519.

Cade, T. J., **C. M. White**, and J. R. Haugh. 1968. Peregrines and pesticides in Alaska. Condor 70:170-178.

White, C. M. 1968. Diagnosis and relationships of the North American tundra-inhabiting peregrine falcon. Auk 85:179-191.

Black, H. L. and **C. M. White**. 1968. High localized bird mortality as a function of high insect populations. Great Basin Naturalist. 28:300.

White, C. M. 1969. Breeding Alaskan and Arctic migrant populations of the peregrine. In: Peregrine Falcon Populations: Their biology and decline. J. J. Hickey, (ed.) University of Wisconsin Press, Madison. pp. 45-51.

White, C. M. 1969. Population trends in Utah Raptors. In: Peregrine Falcon Populations: Their biology and decline. J. J. Hickey, (ed.) University of Wisconsin Press, Madison. pp. 359-362.

White, C. M. 1969. Is there a genetic continuity concerned in eyrie maintenance? In: Peregrine Falcon Populations: Their biology and decline. J. J. Hickey, (ed.) University of Wisconsin Press, Madison. pp. 391-397.

White, C. M. 1969. Functional gonads in peregrines. Wilson Bull. 81:339-340.

White, C. M. 1969. Biosystematics of the North American peregrine falcons. Dissertation Abstracts International, Univ. Microfilms, Ann Arbor, Michigan. Vol. 30(1):445B.

White, C. M. and D. G. Roseneau. 1970. Observations on food, nesting, and winter populations of large North American falcons. Condor 71:113-115.

White, C. M. and J. R. Haugh. 1970. Summer birds of the upper Yukon River, Alaska and adjacent Yukon Territory, Canada. The Canadian Field-Naturalist 83:257-271.

White, C. M. 1970. The oil pipeline and peregrines in Alaska. In: The North American peregrine survey, 1970, T. J. Cade and R. Fyfe. The Canadian Field-Naturalist 84(3):241.

White, C. M. 1970. The Aleutian Islands. In: The North American peregrine survey, 1970, T. J. Cade and R. Fyfe. The Canadian Field-Naturalist 84(3):245.

Cade, T. J., J. L. Lincer, **C. M. White**, D. G. Roseneau, and L. G. Swartz. 1971. DDE residues and eggshell changes in Alaskan falcons and hawks. Science 172:955-957.

White, C. M., W. B. Emison, F. S. L. Williamson. 1971. Dynamics of raptor populations on Amchitka Island, Alaska. BioScience 21:623-627.

Emison, W. B., F. S. L. Williamson, and **C. M. White**. 1971. Geographical affinities and migrations of the avifauna on Amchitka Island, Alaska. BioScience 20:227-230.

White, C. M. and J. H. Streater. 1971. Survey of raptorial birds along the proposed trans-Alaska pipeline system. Raptor Research News 5(3):96-99.

Williamson, F. S. L., W. B. Emison, and **C. M. White**. 1971. Amchitka Bioenvironmental Program. Studies of the avifauna on Amchitka Island, Alaska. Annual progress report, July 1969-June 1970. Battelle Memorial Institute 171-131, 39 pp.

White, C. M. and T. J. Cade. 1971. Cliff nesting raptors and ravens along the Colville River in Arctic Alaska. The Living Bird 10:107-150.

White, C. M. 1972. Falco peregrinus pealei in Ohio--an error. Ohio J. Science 72(3):153-154.

Williamson, F. S. L., W. B. Emison, and **C. M. White**. 1972. Amchitka Bioenvironmental Program. Studies of the avifauna on Amchitka Island, Alaska. Annual progress report. July 1970-June 1971. Battelle Memorial Institute, Columbus Laboratories, U.S. AEC report BMI 171-134, 32 pp.

White, C. M., W. B. Emison, and F. S. L. Williamson. 1973. DDE in a resident Aleutian Island peregrine population. Condor 73:306-311.

Porter, R. D. and **C. M. White**. 1973. The peregrine falcon in Utah, emphasizing ecology and competition with the prairie falcon. Brigham Young University Science Bull., Biol. Ser. 18(1):74 pp.

Cade, T. J., and **C. M. White**. 1973. Breeding of Say's Phoebe in Arctic Alaska. Condor 75:360-361.

Williamson, F. S. L., **C. M. White**, and W. B. Emison. 1973. Amchitka Bioenvironmental Program. Studies of the avifauna on Amchitka Island, Alaska. Annual progress report. July 1971-June 1972. Battelle Columbus Lab., U.S. AEC report, BMI 171-149, 16 pp.

White, C. M. 1973. Raptors and man in conflict and species accounts of the genus Falco. In: Raptor of Utah, L. Eyre and D. Paul, Utah Division of Wildlife Resources, pp 7-8, 59-65.

White, C. M. and S. K. Sherrod. 1973. Advantages and disadvantages of the use of rotorwinged aircraft in raptor surveys. Raptor Res. 7(3/4):97-104.

White, C. M. 1974. Current problems and techniques in raptor management and conservation. Trans. 39th North American Wildlife Natural Res. Conf. pp. 301-312.

White, C. M., W. B. Emison, and F. S. L. Williamson. 1974. Tringa glareola a new North American breeding species. Auk 91:175-177.

Williamson, F. S. L. and **C. M. White**. 1974. Amchitka Bioenvironmental Program. Studies of the avifauna on Amchitka Island, Alaska. Final Progress and Summary Report. August 14, 1967-September 30, 1973. Battelle Columbus Laboratories, U.S. AEC report, BMI 171-155, 28 pp.

Peakall, D. B., **C. M. White**, T. J. Cade, and J. R. Haugh. 1975. Organochlorine residues in Alaskan peregrines. Pesticides Monitoring J. 8:255-260.

Sherrod, S. K., **C. M. White**, and J. A. Estes. 1975. Depredation of sea otter pups by bald eagles at Amchitka Island, Alaska. J. Mammalogy 56(3):701-3.

Braun, C., **C. M. White**, F. Hamerstrom, T. Ray. 1975. Conservation Committee report on status of eagles. Wilson Bull. 87:140-43.

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Cade, T. J., C. M. White, J. R. Haugh. 1971. Ecology and Current Status of Cliff nesting raptors in Arctic Alaska. AINA and Tundra Biome USIBP (Project Code 5342), 22 pp.

White, C. M. and T. D. Ray. 1972. Results of T.A.P.S. raptorial bird survey, 1972. U.S. Fish and Wildlife Service, Anchorage, Alaska. 9 pp. plus maps.

White, C. M. and S. K. Sherrod. 1973. The peregrine falcon in the proposed Woodchopper Reservoir impoundment area, Yukon River. U.S. Fish and Wildlife Service, Anchorage, Alaska and Alaska Power Corporation. 8 pp. plus maps.

Mosher, J. A., J. R. Murphy and C. M. White. 1973. Study of rare or endangered raptors of the Uinta National Forest, final report. Typed report, USFS Forest Supervisors Office, Provo, Utah, 24 pp.

Mosher, J. A., J. R. Murphy and C. M. White. 1974. Study of rare or endangered raptors of the Uinta National Forest 1974. Typed report, USFS, Forest Supervisor's Office, Provo, 20 pp.

White, C. M. 1974. The peregrine falcon in the region of the Alaska Pipeline, Yukon River Crossing Stevens Village to Tanana, Yukon River. U.S. Fish and Wildlife Service, Anchorage, Alaska. 7 pp. plus maps.

Jorgensen, C. D., C. M. White, P. T. Tueller. 1974. Environmental Studies, analysis, and impact statement for the continental operations range. General Research Corporation, Santa Barbara, Calif., 146 pp.

White, C. M. 1974. Survey of the peregrine falcon and other raptors in the proposed Susitna River Reservoir Impoundment Area. U.S. Fish and Wildlife Service, Anchorage, Alaska and Alaska Power Cooperation. 4 pp. plus maps.

White, C. M. 1974. The 1974 raptor survey of the Alaska Pipeline between Franklin Bluffs and Big Delta. U.S. Fish and Wildlife Service, Anchorage, Alaska. 9 pp plus maps.

White, C. M. 1974. Hunting range of a breeding peregrine falcon on Franklin Bluff, Sagavanirktok River. U.S. Fish and Wildlife Service, Anchorage, Alaska. 5 pp. plus maps.

Mosher, J. A., J. R. Murphy and C. M. White. 1974. Study of rare or endangered raptors of the Uinta National Forest 1974. Typed report, USFS, Forest Supervisors Office, Provo, Utah 20 pp.

White, C. M. and T. J. Cade. 1975. Raptor studies along the proposed Susitna powerline corridors, oil pipeline, and in the Yukon and Colville River regions of Alaska. Combined report for 1975 to U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, Arctic Institute of North America and American Museum of Natural History. 29 pp. plus 2 Figs., 11 Tables.

White, C. M. and D. A. Boyce. 1977. Distribution and ecology of raptor habitat studies for the Kilbuk Mts., Anvik, Unalakleet, and Northwestern Arctic regions of Alaska. Bureau of Land Management, Anchorage, Alaska. 49 pp. plus maps.

White, C. M. and S. G. Jones. 1977. Distribution and ecology of the peregrine falcon in Victoria, Australia--final report. Fisheries and Wildlife Division, Ministry for Conservation, Victoria, Australia, 92 pp.

Jorgensen, C. D., C. M. White and C. L. Pritchett. 1978. Annual Report; Raft River environmental studies. Submitted to ERDA (Dept. of Energy) and E G and G, Idaho Falls, Idaho. 207 pp.

White, C. M., T. L. Thurow and J. L. Sullivan. 1978. Siting criteria as a function of sensitivity of nesting ferruginous hawks togeothermal development. MS. Dept. of Energy Controlled Technology Symposium, 27-29 Nov., Wash. D.C.

White, C. M., S. G. Jones and W. R. Devine. 1978. Distribution and ecology of the peregrine falcon in Victoria--terminal report. Ministry of Conservation, Victoria, Australia. 128 pp. plus frontispiece and appendix.

White, C. M. 1979. Importance of the birds of prey resource on KGRAs. (Abstract). At Snake River Basin Geothermal Environmental Workshop, Boise, Idaho, 9-10 January 1979.

White, C. M. and T. L. Thurow. 1979. Ferruginous Hawks and geothermal development. Final Report for 1978 (contract EY-77-07-1674) U.S. Dept. of Energy and E G and G. 22 pp.

White, C. M. 1979. A Bald Eagle study of the Colorow Gathering System, Rio Blanco Co., Colorado. Prepared for Northwest Pipeline Corporation. 12 pp. plus 6 Figs.

Boyce, D. A. and C. M. White. 1979. A Peregrine Falcon nesting habitat survey on U.S. Forest Service lands in northwestern California - 1979. Report to U.S. Forest Service, Contract 53-9A47-9-17. 59 pp plus 226 p. appendix.

Boyce, D. A. and C. M. White. 1979. A peregrine falcon nesting habitat survey on U.S. Forest Service lands in northwestern California, 1979. Wilderness Research Institute Inc. 59 pp. plus 237 pgs. appendix.

White, C. M. and T. L. Thurow. 1979. Ferruginous hawks and geothermal development. Annual report for 1979 (Contract No. EY-77-S-07-1674 and supplements), U.S. Dept. of Energy and EG&G Idaho, 25 pp.

Boyce, D. A. and C. M. White. 1980. Peregrine falcon nesting habitat survey on the Fremont National Forest - 1980. Report to the U.S.F.S, contract 00-0485-0-0875. 42 pp. plus 83 pp. appendix.

Boyce, D. A. and C. M. White. 1980. Peregrine falcon nesting habitat survey on U.S. Forest Service lands along the west slope of the Sierra Nevada Mountains - 1980. Report to U.S.F.S., contract 53-91U9-0-80029. 46 pp. plus 260 pp. appendix.

Murphy, J. R. and C. M. White. 1980. Raptor surveys in the Intermontane Valleys (MX racetrack areas] of Western Utah and Eastern Nevada, May-June 1980. Final Report to HDR Sciences Division, 14 pgs. plus tables.

Smith, H. D., J. T. Flinders, C. D. Jorgensen and C. M. White. 1980. Ecology of vertebrate wildlife in relation to spruce budworm and forest management practices, 203 pp. Submitted to U.S. Forest Service CANUSA - WSBW Program, Portland, Oregon.

White, C. M. 1980. The avifauna and raptors of the skyline mine project. Report to Coastal States Energy, Co., SLC, Utah. 11 pp. plus maps and appendix.

White, C. M. 1980. Raptors and general avifauna studies SUFCo, Convulsion Canyon, July-August, 1980. Report to Coastal States Energy Co., SLC, Ut. 14 pp. plus maps and appendix.

White, C. M. 1980. Raptor survey of right fork, starpoint fork of Deadman Canyon and Straight Canyon, Pennacle Mine. Report to AMCA Coal Leasing, Price, Ut. 8 pp. plus maps.

Mader, W. J. and C. M. White. 1981. Raptor surveys at the proposed MX-08 site, Coyote Springs area, Nevada and Milford-Beryl areas, Utah and Special Adjacent Peregrine Falcon Survey areas - June 1981. Report to HDR Sciences Div., 20 pp plus maps.

White, C. M. 1982. Final Report of Survey of Endangered Vertebrate Species, Gibson Dome and Elk Ridge, San Jaun Co., Utah. Report to Bechtel Group, Inc. for National Waste Terminal Storage Program, DOE, 19 pp. plus 4 maps.

Boyce, D. A. and C. M. White. 1982. Peregrine falcon nesting habitat survey along Fish Creek River, Oregon. BLM (contract YA-553-07-1071), Final Report, BLM, Lakeview, Oregon, 46 pp.

Jorgensen, C. D., G. M. Booth, M. W. Carter, C. M. White and R. C. Whitmore, Jr. 1982. The effects of Carbofuran 4F formulation (Furadan 4F) on avian and insect populations in alfalfa (Medicago sativa). 120 pp. Submitted to F.M.C. Corporation, Philadelphia, PA.

Jorgensen, C. D., G. M. Booth, M. W. Carter, C. M. White and R. C. Whitmore, Jr. 1982. The effects of two Carbofuran formulations (10G and 15G) on avian populations associated with corn fields. 15 pp plus 40 tables and graphs. Submitted to F.M.C. Corporation, Philadelphia, PA.

White, C. M. 1982. Final report of surveys of endangered vertebrate species, Gibson Dome and Elk Ridge study areas, San Juan Co., Utah. Report to Bechtel Group, Inc. San Francisco. 18 pp. plus 7 pp. maps and appendix.

White, C. M. 1982. Letter report of site surveys of borehole and meterological stations adjacent to Gibson Dome, for endangered animals. Report to Bechtel Group, Inc. San Francisco, 5 pp.

White, C. M. 1983. Letter report on literature review for endangered species and other items in Task 2, for Gibson Dome study area. Report to Bechtel Group, Inc. San Francisco. 11 pp. plus 24 pp. maps and appendix.

White, C. M. 1983. Draft-final report, endangered vertebrates, Gibson Dome. Report to Bechtel Group, Inc. San Francisco. 13 pp.

White, C. M. and D.A. Boyce, Jr. 1984. Preliminary findings of the professional development grant to study Neotraopical Falconids, Argentina, 27 Dec. to 22 Jan. 1984. Report to BYUPDC, 42pp.

White, C. M. 1984. Environmental checklist for threatened and endangered animals, King Mine, Carbon Co., Utah. Report to Bechtel National, Inc., San Francisco, 10 pp.

Bio/West, Inc., Endangered Plant Studies, Inc., and C. M. White. 1984. A threatened and endangered species survey for proposed CO_2 and Phosphate Slurry Pipelines, Colorado, Utah and Wyoming (PR-96-1). Report to the Chevron Corporation through Bechtel Group, Inc., 40 pp plus 20 pp appendix, plus map.

White, C. M. 1985. Bald eagles and the Phosphate-CO_2 pipeline. Report to Bechtel Group, Inc. on behalf of Chevron Corporation, 45 pp.

White, C. M. 1985. Raptors and grouse along the Phosphate - CO_2 pipeline. Report to Chevron Resource Corporation, San Francisco, 25 pp. plus 44 pp. appendix.

White, C. M. 1987. Faunal resources, birds: U.S. Highway 189, Utah Valley to Heber Valley, Utah and Wasatch Co. Utah. Report by H.D. Smith and Assoc. (Provo) and HNTB (Seattle), 25 pp + tables.

White, C. M. 1988. Endangered animal species along the Utah Power and Light Southwest Intertie Project (SWIP). Report to Endangered Plants, Inc., Provo, UT. 20 pp.

White, C. M. 1989. Kaiparowits Coal Project Raptor Survey. Report to Andalex Resources, Inc., Tower Division, Price, UT. 5pp + map.

Crawley, J. and C.M. White. 1990. Final Report: *Pandion haliaetus* on Flaming Gorge: 1989-1990 breeding season. Report to Utah Div. Wildl. Res. and U.S. Forest Serv., 30 pp + 6 maps.

Sherrod, S.K., B.J. Walton, and C.M. White. 1991. Khazakstan, S.S.R. initial joint U.S.- U.S.S.R. falcon work, 12-26 June 1991. Report to Mutual Trust for Understanding, 15 pp.

Johansson, C. and C.M. White. 1991. Dixie National Forest 1991 goshawk project. Submitted to Dixie National Forest, Cedar City, Utah., 40 pp.

White, C.M. 1992. Raptor survey, Wah Wah Mt. area for proposal seismic lines, Northern Geophysical of America, Co., 7 pp.

White, C.M., J. Holmes and D. Beal. 1992. A preliminary survey of northern goshawk nesting habitat: Manila Ranger District, Ashley National Forest and Evanston and Mt. View Districts, Wasatch-Cache National Forest. Submitted to D. Winn, U.S. Forest Service, Logan Ut., 15 pp. + 9 maps.

Johansson, C. and C.M. White. 1993. Dixie National Forest 1992 Goshawk Project, Final Report. Dixie Nat'l Forest, Cedar City, UT. 21 pp.

White, C.M, C. Johansson and P. Hardin. 1993. A peregrine falcon survey of Katmai National Park, Alaska, Challenge Grant account # 5-20676. Katmai National Park and Preserve, King Salmon, Ak. 26 pp + map.

Ellison, A. and C.M. White. 1996. Biology and habitat use of mountain plovers in the Uintah Basin. Report to U,S. BLM and Utah Div. Wildl. Resour. 20pp.

White, C.M. 1997. Legacy Highway bird surveys, April-September 1997, Final Report. Submitted to Baseline Data, Inc., Orem, UT. 14 pp. text, 52 pp. tables 9 pp. maps.

Ellison, A., C.M. White and M. Landers. 1998. Mountain plover surveys on the Monument Butte oil field and habitat relationships, April to August 1997. Submitted to the U.S. BLM, Vernal District and Utah State Div. Wildl. Resources, NE Region. 15 pp., text, 5 tables.

Ellison, A., C.M. White and W. Mendel. 1999. Mountain plover surveys on the Monument Butte oil field; April to August 1998. Submitted to U.S. BLM, Vernal District and Utah Division of Wildlife Resources, Northeastern Region. 13pp text + 5 Tables

Lloyd, J.E., C.M. White and T.T. Lloyd. 2000. Mountain Plover *Charadrius montanus* populations and nest site selection in the Uitah Basin,: A Micro habitat Analysis. Submitted to U.S. BLM, Vernal District and Utah State division of Wildlife Resources, 19pp text + 6 Tables.

Academic and Professional Honors, Awards, and Appointments:

Frances B. Roberts Award, Cooper's Ornithological Society, 1968.
Elected member, Laboratory of Ornithology, 1969.
Sigma Xi Grant-in-Aid, 1964.
Chapman Fund Grant, American Museum of Natural History, 1966.
Sigma Xi, ASBYU Research Award, 1973.
Elected member, American Ornithology Union, 1974.
Appointed member, Alaskan peregrine falcon recovery team. Office of Endangered Species, Dept. of the Interior, 1974-1985.
Appointed member, American Ornithologist Union, Committee on Public Responsibility, 1977.
Appointed member, Advisory Committee for Division of Polar Programs, National Science Foundation, 1978-1985.
Included in American Men and Women in Science, 12th ed.
Board of Directors, Peregrine Fund, Inc., 1983-1991.
Scientific Advisor, Greenland Peregrine Falcon Survey Team, Ohio, 1980-present.
Board of Advisors, Falcon Research Group, Washington State, 1982-present.
Advisory Board, Salt Lake City Tracy Aviary, 1982-present
Member, four member "Blue-Ribbon" panel on California Condor status, funded by Sierra Club, Oct. 1984
Advisory Board, Western Foundation for Raptor Conservation, New Mexico, 1986-1990.
Scientific Advisor, Geo. M. Sutton Avian Research Center, Oklahoma, 1984-present.
Adjunct Professor of Biology, Dept. Biology, Boise State University, 1985-present.
Nature Conservancy, Utah Advisory Committee, Great Basin Field Office, 1986-present.
Invited participant, 9-person team, U.S.-PRC Bird migration workshop, Qingdao, People's Republic of China, 3-18 October 1988.
Appointed member, American peregrine falcon recovery team, Western U.S. Office of Endangered Species (Regions 1, 2, & 6). U.S. Fish and Wildlife. Serv., 1987-1994.
Department Outstanding Achievement and Service Award, 1990-91.
College of Biological and Agricultural Sciences Creative Achievement Award, 1993.
Guest Dinner Speaker, American Birders Association Convention, 17-23 June 1996, Park City, Utah.

Karl G. Maeser Research Award (University award), in recognition of extraordinary research, August 1996.
International Game Bird and Conservationists' Association award (cash award), 1996., for work on Red-tailed Black Cockatoo in Victoria, Australia.

Overseas outside reader, dissertation examiner, or adjunct students:

1. Fox, Nick. 1977. The biology of the New Zealand falcon (Falco novaeseelandise Gmelin 1788). Univ. Canterbury, Christ Church, New Zealand. Ph.D. dissertation.
2. Baker-Gabb, David J. 1982. Comparative ecology and behaviour of swamp harriers Circus approximus, spotted harriers C. assimilis, and other raptors in Australia and New Zealand. Monash Univ., Clayton, Vic. Australia. Ph.D. dissertation.
3. Watson, Richard T. 1986. The ecology, biology and population dynamics of the bateleur eagle (Terathopius ecaudatus). Univ. Witwatersrand, Johannesburg, South Africa. Ph.D. dissertation.
4. Nielsen, Olafur Karl. 1986. Population ecology of the Gyrfalcon in Iceland, with comparative notes on the merlin and the raven. Cornell Univ., Ithaca, NY. Ph.D. dissertation.
5. Olsen, Jerry. 1987. The effect of weather on nesting peregrine falcons near Canberra, Australia. Univ. of New England, Armidale, N.S.W. Aust. M.S. Thesis.
6. Brown, Christopher J. 1988. A study of the bearded vulture Gypaetus barbatus in southern Africa. Univ. of Natal, Pietermaritzburg, South Africa. Ph.D. Dissertation.
7. Swem, Theodore. 1989. Biology of rough-legged hawks (Buteo lagopus) on Alaska's north slope. Boise State Univ., Boise, ID, M.S. Thesis.
8. Burton, Andrew Mark. 1991. Resource partitioning between two sympatric goshawks in the Australian wet tropics. James Cook University of North Queensland, Australia, Ph.D. Dissertation.
9. Olsen, Penny D. 1991. Aspects of the evolutionary ecology of reproduction of raptors. Australian National Univ., Canberra, Australia, Ph.D. Dissertation.
10. Leary, Alan W. 1996. Home ranges, core use areas, and dietary habits of ferruginous hawks (Buteo regalis) in southcentral Washington. Boise State University, Boise, Idaho, M.S. Thesis.
11. Schmidt, Elise Vernon. 1996. Population differentiation in migrating raptors as indicated by mtDNA and morphological variation. Univ. Nevada at Las Vegas, Las Vegas, Nevada, Ph.D. Dissertation.
12. Jenkins, Andrew R. 1998. Behavioural ecology of peregrine and lanner falcons in South Africa. Univ. of Cape Town, Rondebsoch, South Africa, Ph.D. Dissertation.

Professional Exposure and Meetings:

Assistant Editor, AUK (American Ornithologists' Union) 1966.
Editor, J. RAPTOR RESEARCH (Raptor Res. Foundation, Inc.), 1977-1987.
Review Editor, AUK, CONDOR, WILSON BULLETIN, 1968-present; MURRELET, 1977-present.
Editorial Board, GREAT BASIN NATURALISTS, 1974-1993.
Recent Literature Submitter, J. FIELD ORNITHOLOGY, 1978-present.

Review proposals for: NATIONAL GEOGRAPHIC SOCIETY, NATIONAL SCIENCE FOUNDATION, AUSTRALIAN RESEARCH COUNCIL

Reviewed papers for: SCIENCE, AMER. NAT., SOUTHWEST NAT., EVOLUTION, J. WILDL. MANAGE., CANADIAN J. ZOOLOGY, EMU., NATURE (London), RESOURCE PUBLICATIONS (U.S. FISH AND WILDLIFE SERVICE), MURRELET (NORTHWEST NAT.), WESTERN BIRDS, UTAH BIRDS, THE CONDOR, THE AUK, THE WILSON BULLETIN, J. FIELD ORNITHOL, NATURAL AREAS J, CORELLA, EL HORNERO, JOURNAL OF BIOGEOGRAPHY.

Reviewed book manuscripts for: CORNELL UNIVERSITY PRESS, OHIO STATE UNIVERSITY PRESS, UTAH STATE UNIVERSITY PRESS, BRIGHAM YOUNG UNIVERSITY PRESS, ACADEMIC PRESS, T & A D POYSER PUBLISHER (LONDON), BUTEO BOOKS.

Many **contributed** and **invited papers** at professional meetings (average three per year since 1968) with first professional paper given in 1964; Invited papers are not only within the U.S. but also foreign (**Too many to list**) but recent examples of contributions to meetings are:

1. Fifth International Conference on Birds of Prey, Badajoz, Spain 17-22 April 1995; co-chair (with Vladimir Galushin, Russia) of session entitled Socio-Economic Aspects of Raptor Conservation. Three papers given at conference, a synthesis paper--"Language use and misapplied, selective" science, their roles in swaying public opinion and policy" and two original research papers--"Captive breeding and releases of peregrine falcons in North American" and "Survey mapping with Global Positioning Systems (GPS) and Geographic Information systems (GSI); integration of data modelling applications."
2. Invited speaker and session chair, specialist workshop of the Middle East Falcon Research Group, Abu Dhabi, United Arab Emirates, 14-16 November 1995; paper "The Taxonomy of Desert Falcons."
3. Invited speaker, Utah Section of Wildlife Society Annual meeting, Provo, Utah, 8 Feb. 1997; topic "Status of the peregrine falcon; is it endangered?"
4. Invited workshop presenter and speaker, 5 presentations given at course entitled, "Al Corso di Formazione Sulle Tecniche e Medodi di Ralascio Degli Uccelli da Preda," for the Associazione Italiana Per i Rapaci, held at Bassano del Grappa, Italy, 26 May-1 June 1997.
5. Midwest Regional Raptor Management and Peregrine Symposium, synthesis paper on "Reflections on the 'Urban Peregrine' Paradigm," Milwaukee Public Museum, 13-14 March 1997.

Travel and Languages:

Lived in Argentina and Chile, 1956-58; Spanish, fluent, writing. Participated in or conducted research throughout western U.S. and Alaska and in Argentina, Australia, Brazil, Chile, Fiji, Ecuador, Greenland, New Zealand, Vanuatu, and Venezuela. Part of U.S. Fish and Wildlife Service, USA/People's Republic of China exchange team/workshop, 1988. Part of U.S. Fish and Wildlife Service, USA/USSR Environmental Exchange Program, to Kazakhstan, SSR, 1991.

Professional Memberships and Positions:

Society	Positions Held
American Association for Advancement, Science	(Not current) None
American Ornithologists' Union	Committee Member (Elected member)
Cooper's Ornithological Society	None
Wilson Ornithological Society	None
Society of Systematic Zoology	None
The Society of the Sigma Xi	None
Raptor Research Foundation Inc.	Chairman, Editor (1977-86)
Pacific Seabird Group	None
International Council for Bird Preservation	U.S. Coordinator (Raptor world group)
American Museum of Natural History	Associate member -None
The Nature Conservancy	Utah Advisory Committee
Australian Raptor Association	None

Special Activities and Public Relations:

Newspaper and magazine articles on my research have appeared in: The National Observer, The Washington Post, New York Times (AP release--duplication nationwide), Time Magazine, Wall Street Journal, and several local US and foreign papers (e.g., Fiji Times, 21 July 1997)

Interviewed on T.V., 1970, 1978, 1982, 1984, 1985, 1986, 1990 and local radio 1977, 1981, 1983, 1986.

Talks to schools, museums, societies, and church groups on research are at the rate of about three per year.

Guest Lecturer at: American Museum of Natural History (annual lecture series), Utah Museum of Natural History, Utah Audubon Society, Utah Division of Wildlife Resources Workshop, Utah Aviculturalists Society, Hogle Zoological Gardens Docents.

Committee activities:

University: Pre-dental Committee, 1977-79
College: Rank Advancement and Tenure Committee, 1996-present.
Department: Departmental level responsibilities (Rank Advancement, Executive, Seminar etc.; **too many to list)**

Graduate students for whom I was or am Advisor or Major Professor:

M.S. Degree

Platt, Joseph B. Habitat and Time Utilization of a Pair of Nesting Sharp-shinned Hawks (*Accipter striatus velox*): A Telemetry Study - completed 1973.

Jenkins, M. Alan. Behavior of the gyrfalcon from hatching to fledging: a time-lapse photographic study - completed 1974.

Sherrod, Steve K. Biology of northern bald eagles on Amchitka Island, Alaska - completed 1975.

Beske, Alan E. Goshawk biology in desert mountain ranges - dropped out of program.

Burnham, Wm. H. Breeding biology and ecology of the peregrine falcons in west Greenland - completed 1974.

McArthur, Laurence B. Utilization of nest boxes by birds in three vegetational communities with special references to the American kestrel - completed 1977.

Thurow, Thomas L. Ecology and behavior of the gymnogyne (Polyboroides typus) - completed 1979.

Jones, Stephen G. Abundance and habitat selection of shore birds at Prudhoe Bay, Alaska - completed 1980.

Parker, Wm. K. The influence of western spruce budworm on avian succession in a grand fir forest - completed 1981.

Williams, Richard N. Breeding ecology of prairie falcons at high elevations in central Colorado - completed 1981.

Pruett-Jones, Melinda Anne. Spacing and distribution of bowers in Macgregor's bowerbird - completed 1981.

Lemon, Rodney R. Ecological, nutritional and physiological factors related to cedar waxwing feeding in winter in central Utah - completed 1981.

Martin, John W. Aspects of breeding biology and habitat use by northern harriers in agricultural situations - completed 1984.

Meese, Robert J. The distribution and density of passerines in west Greenland in relation to peregrine falcon nesting sites - completed 1984.

Albuquerque, Jorge L. B. The peregrine falcon in southern Brazil: Aspects of winter ecology in an urban environment - completed 1984.

Fristensky, (Looman) Sandra. Productivity, food habits and sexing of barn owls in Utah - completed 1985.

Grebence, Brandon. Physiographic characteristics of peregrine falcon nesting habitat along the Colorado River System in Utah - completed 1988.

Payne, Val. Effects of subsidence from underground coal mines on golden eagle nests - dropped program.

Johansson, Carl. Large-area goshawk habitat modeling in the Dixie National Forest using vegetation and elevation data - completed 1994.

Haney, Don L. Population dynamics of wintering merlins (*Falco columbarius*) in central Utah - completed 1997.

Baker, Aaron J. Stataus and breeding biology, ecology, and bheavior of the orange-breasted falcon (*Falco deiroleucus*) in Guatemala and Belize. - completed 1998.

Kremer-Goodell, Shelly R. Diet analysis of the great-horned owl (Bubo virginianus) in disturbed and undisturbed habitat types. - completed 1999.

Ellison, Ann E. Distribution and reproductive status on the mountain plover (*Charadrius montanus*) in the Uintah Basin. - completed 1999.

Lloyd, Jason E. Mountain Plover (*Charadrius montanus*) poulations and nest site selection in the Uintah Basin: a micro-habitat analysis. – completed 2000.

Mika, Markus. Prey base differences and reproductive out put of breeding Flammulated Owls (*Otus flammeolus*) in northern Utah.-- in progress

Sonsthagen, Sarah. Movements of the Northern Goshawk as determined by satellite telemetry. – in progress

Hill, Rebecca. Affects of forest harvest on Three-toed Woodpecker in the Fish Lake National Forest.-- in progress

<u>Ph.D. Degrees</u>

Mosher, James A. Raptor temperature regulation and energetics - completed 1975.

Knight, Richard L. Aspects of auklet - peregrine falcon interaction in the Aleutean Islands - dropped out of program.

Whitmore, Robert A. Habitat partitioning in a community of passerine birds - completed 1975.

Mader, William J. Ecology of the savanna hawk in Venezuela - completed 1981.

Platt, Stephen W. Prairie falcons: aspects of population dynamics, individual vocal identification, marking and sexual maturity - completed 1981.

Benson, Patrick G. Large raptor electrocution and power pole utilization: a study in six western states - completed 1981.

Castrale, John S. Use of managed sagebrush grasslands by bird populations - completed 1981.

Mindell, David P. Migration of North American breeding raptors: Endogenous versus environmental control, biogeography and hazard to aircraft - completed 1985.

Williams, Richard N. Introduction, distribution, and foraging ecology of two introduced bulbuls (Pycnonotus) in Hawaii - completed 1985.

Whaley, Wayne H. Trends in geographic variation of Cooper's hawk and northern goshawks: a multivariate analysis - completed 1988.

Boyce, Douglas A., Jr. A systematic study of the family falconidae: Protein electrophoretic analysis of genera, gene expression in the American Kestrel (Falco sparverius), and morphological analysis of the subgenus Tinnunculus (kestrels)- completed 1989.

Parrish, Jimmie R. The biogeochemistery of nearctic peregrine falcons - completed 1989.

Johansson, Carl. The Bird-Avert system; development of technology to eliminate bird kills from industrial toxic evaporation ponds - in progress.

Committees on which I had major input as a member or secured funding

Mitchell, Ronald M. Nesting ecology of the double-crested cormorant on Utah Lake, MS, 1974.

Woffinden, Neil D. Ecology of the ferruginous hawk (Buteo regalis) in central Utah: Population dynamics and nest site selection, Ph.D., 1975.

Joseph, Ronald A. Behavior and age class structure of wintering bald eagles (Haliaeetus leucocephalus) in western Utah, MS, 1977.

Burgoyne, Paul C. Bird population changes and manipulation of a ponderosa pine forest on the Kaibab Plateau, Arizona, Ph.D., 1980.

Lee, Julie A. Comparative breeding behavior of the goshawk and the Cooper's hawk, MS, 1981.

Pearson, Craig B. The density, diversity and distribution of owls along the Wasatch Front--An experimental approach, MS, 1981.

Zarnekee, Carolyn V. Circadian activity pattern of the burrowing owl (Athene cunicularia), MS, 1982.

DeLong, Tod, R. Effects of ambient condition on nocturnal nest behavior in long-eared owls, MS, 1982.

Ellis, Kevin L. Distribution and habitat selection of breeding male sage grouse in northeastern Utah, Ph.D., 1986.

Fischer, David L. Daily activity patterns and habitat use of coexisting Accipiter hawks in Utah, Ph.D. 1986.

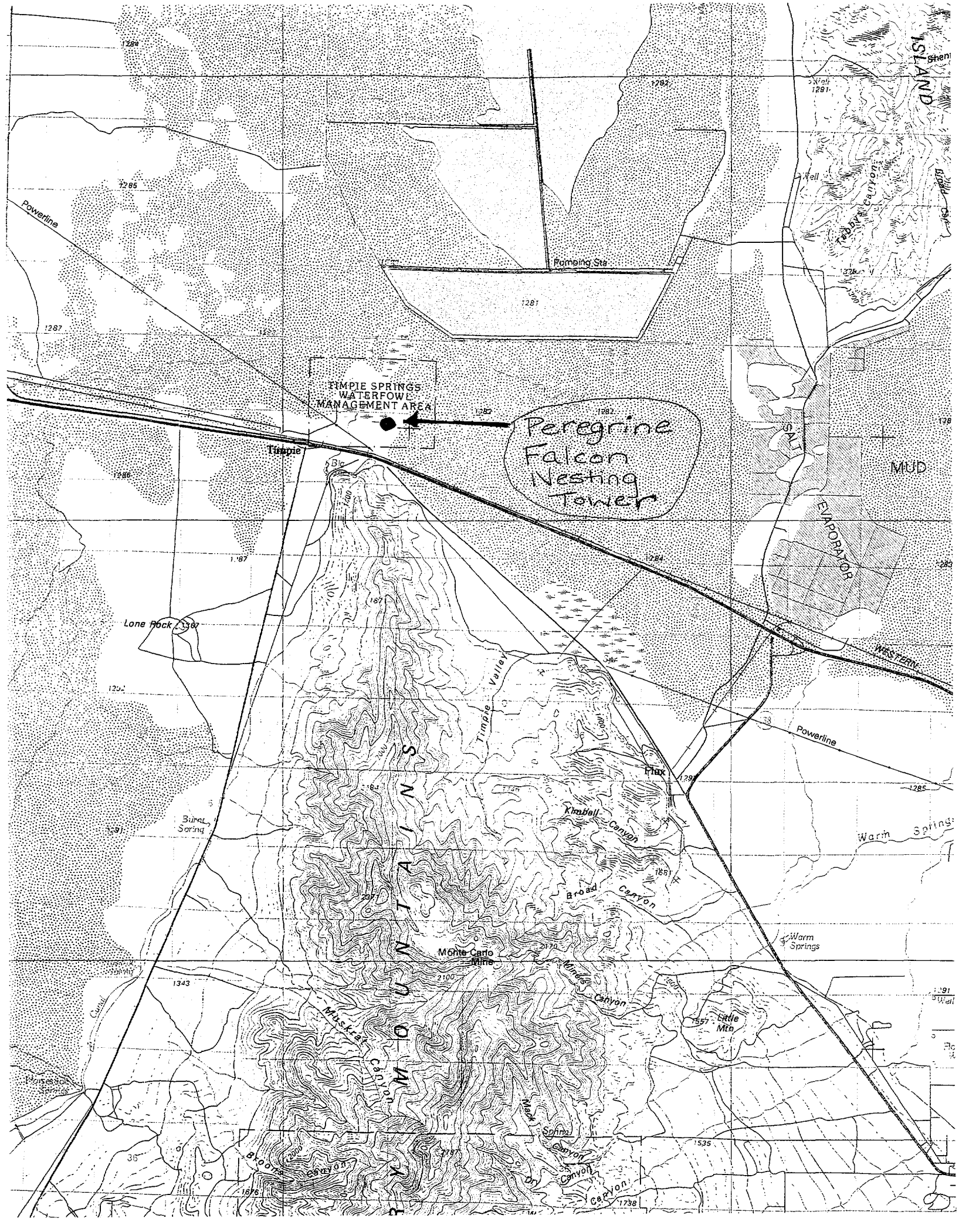
Sabine, Neil B. Aspects of bald eagles wintering behavior in Rush Valley, Utah: a telemetry study, Ph.D., 1987.

LeClere, Monica G. Food niche relationships of sympatric raptors in western Utah, Ph.D., 1990.

Other Graduate Committees:
I have served as a committee member on an additional 23 graduate programs in the departments of Botany and Range Science and Geology and advised on a committee in the department of Geography.April 29, 1998

EXHIBIT 2
White Declaration

Map showing location of peregrine falcon nesting tower at Timpie Springs Waterfowl Management Area.



Peregrine Falcon Nesting Tower
TIMPIE SPRINGS WATERFOWL MANAGEMENT AREA
Timpie
Pumping Sta
Powerline
Lone Rock
Timpie Valley
Flux
Kimball Canyon
Broad Canyon
Warm Springs
Monte Carlo Mine
Miners Canyon
Little Mtn
Muskrat Canyon
Mack Spring Canyon
Broons Canyon
Dry Canyon
Canyon
Burnt Spring
Horseshoe Springs
SALT
EVAPORATOR
MUD
WESTERN
ISLAND
Tabbys Canyon
Well

EXHIBIT 3
White Declaration

Photograph of approximately ½ to ¾ mile to the west of the Timpie I-80 Interchange taken from near the Union Pacific mainline facing toward the interchange and the Cargill plant.

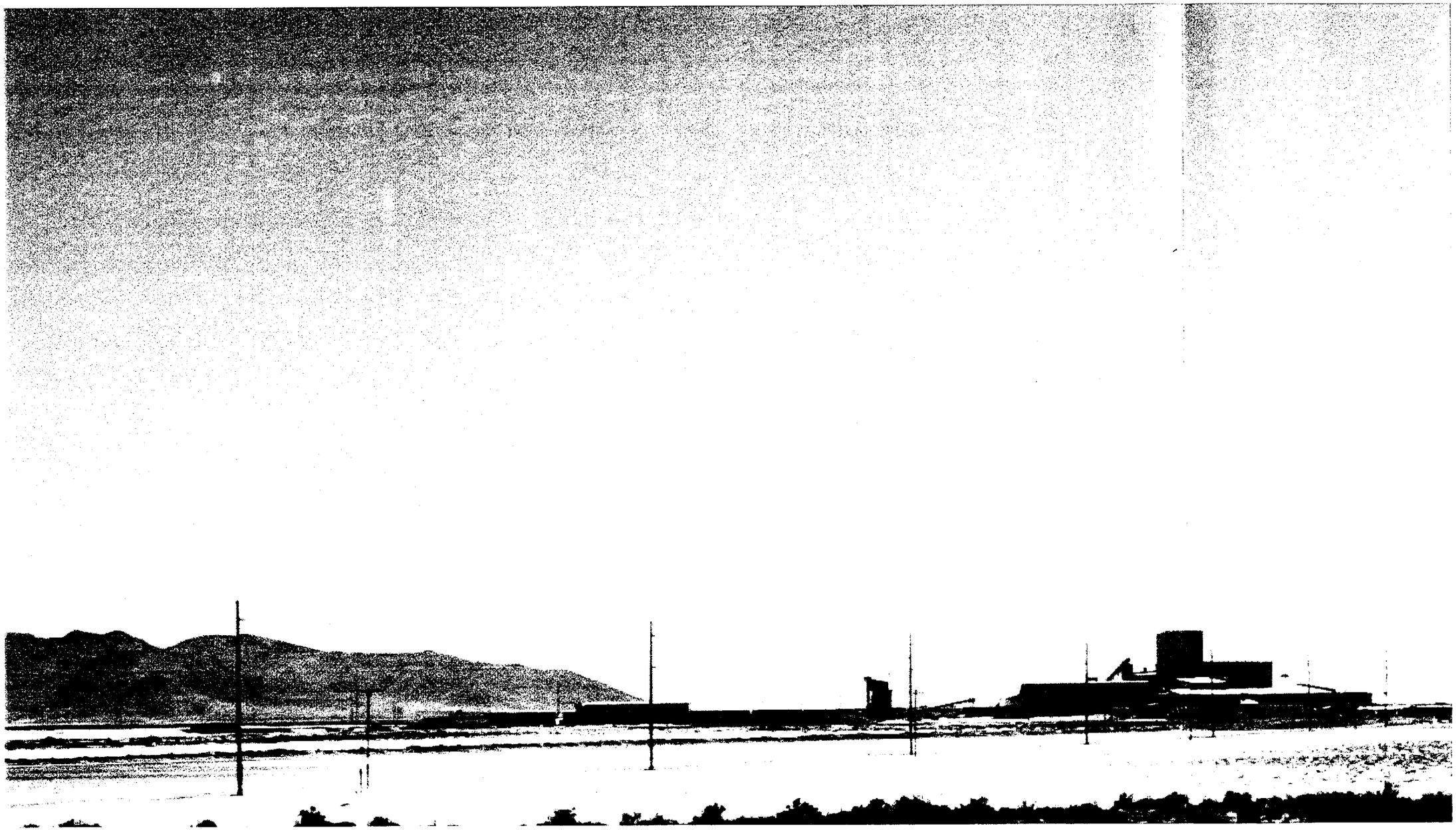
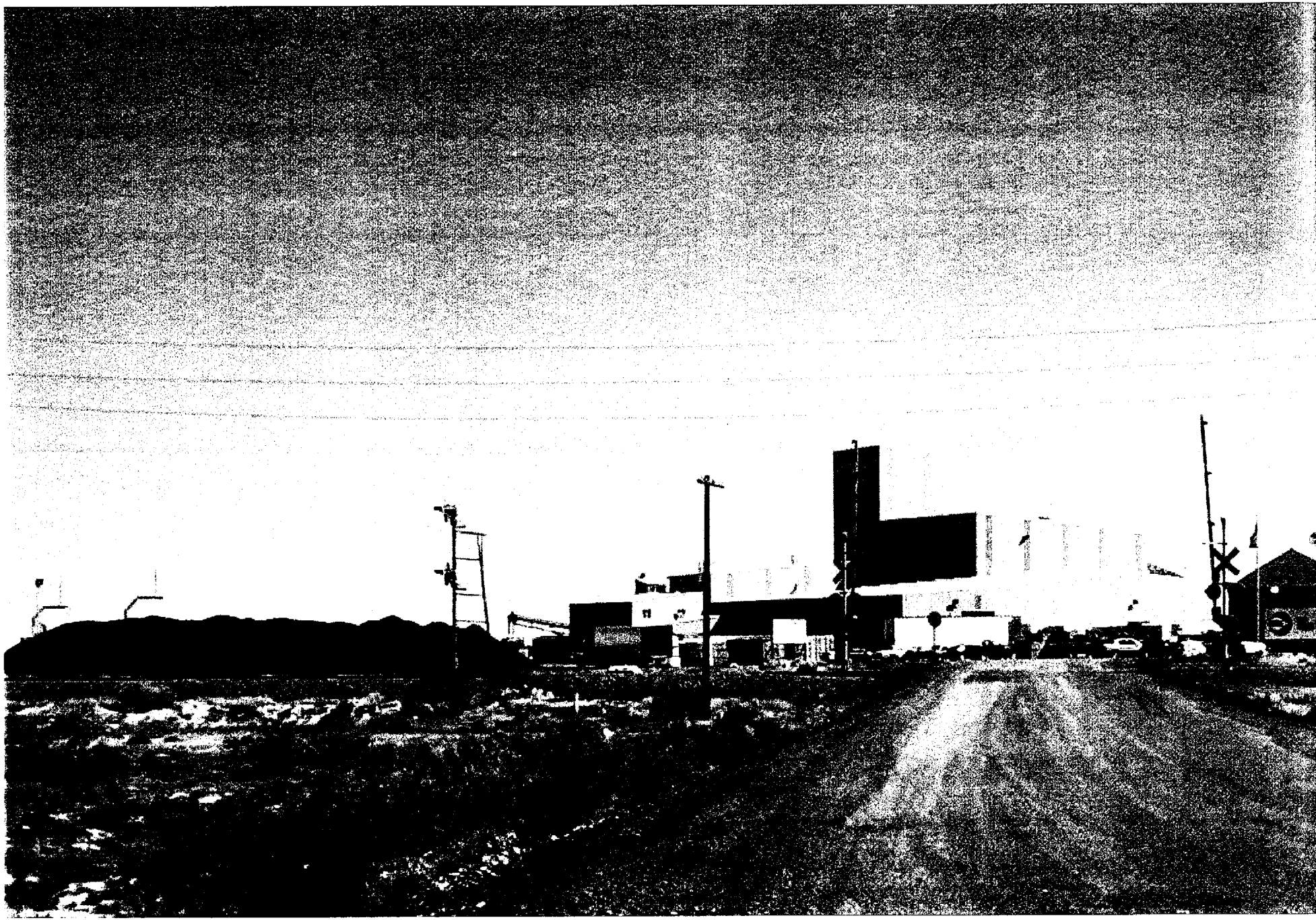


EXHIBIT 4
White Declaration

Photograph of the Cargill plant taken at the junction of the frontage road, which runs just to the north and parallel to I-80, and the access road to the Cargill plant.



file://C:\WINDOWS\TEMP\White%20Exhibit%204.jpg