

VALUATION OF AMERICAN INDIAN LAND AND WATER RESOURCES: A GUIDEBOOK

February 2002



U.S. Department of the Interior
Bureau of Reclamation

REPORT DOCUMENTATION PAGE

Form Approved

OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suit 1204, Arlington VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Report (0704-0188), Washington DC 20503.

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| 1. AGENCY USE ONLY (Leave Blank) | | 2. REPORT DATE February 2002 | 3. REPORT TYPE AND DATES COVERED | |
| 4. TITLE AND SUBTITLE Valuation of American Indian Land and Water Resources: A Guidebook | | | 5. FUNDING NUMBERS Funding from Bureau of Reclamation Office of Policy and Native American Affairs Office. | |
| 6. AUTHOR(S) Miriam Z. Hammer | | | | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U. S. Bureau of Reclamation Technical Service Center Economics Group (D-8270) Denver, Colorado 80225 | | | 8. PERFORMING ORGANIZATION REPORT NUMBER EC-2002-03 | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U. S. Bureau of Reclamation Denver, CO 80225 | | | 10. SPONSORING/MONITORING AGENCY REPORT NUMBER DIBR | |
| 11. SUPPLEMENTARY NOTES N/A | | | | |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT Available from the National Technical Information Service, Operations Division, 5285 Port Royal Road, Springfield, VA 22161 | | | 12b. DISTRIBUTION CODE | |
| 13. ABSTRACT (Maximum 200 words) This guidebook explores issues associated with valuing land and water resources which are used, or considered significant, by American Indians. Various valuation possibilities, monetary and otherwise, are discussed. The intent is to give more complete and systematic attention to natural resources valued by tribes which may be affected by federal actions or activities. | | | | |
| 14. SUBJECT TERMS Natural resource economics, Indian resources, cultural resources. | | | 15. NUMBER OF PAGES 47 pages | |
| | | | 16. PRICE CODE | |
| 17. SECURITY CLASSIFICATION OF REPORT UL | 18. SECURITY CLASSIFICATION OF THIS PAGE UL | 19. SECURITY CLASSIFICATION OF ABSTRACT UL | 20. LIMITATION OF ABSTRACT UL | |

Technical Memorandum Number EC-2002-03

**VALUATION OF AMERICAN INDIAN LAND AND WATER RESOURCES:
A GUIDEBOOK**

by

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Denver, Colorado**

February 2002

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Introduction: Why this guidebook?

This guidebook was undertaken in response to concerns that U.S. Bureau of Reclamation (Reclamation) Environmental Impact Statements (EIS), Environmental Assessments (EA), and other project assessments and proposals sometimes pay too little attention to the significance of land and water resources to American Indians. The problem is apparent especially in those sections of the papers dealing with the economic impacts of the proposed actions.

Of course, there are sections of project proposals, EA and EIS that require the consideration of projects' impacts on cultural and archeological resources and on Indian Trust Assets (ITA). American Indian cultural, religious, and historic resources are one of the primary areas of focus of such requirements. (See National Environmental Policy Act 1992, sections 1501.5, 15.02.15, 1502.16; National Historic Preservation Act, 16 U.S.C. 470, U.S. Bureau of Reclamation 2000, Sections 3.13.4-3.13.7; U.S. Water Resources Council 1983 Chapter III, Environmental Quality (EQ) Procedures; 36 CFR 68.3; 40 CFR Parts 1500-1508; 43 CFR 3; 43 CFR 7). The economic impacts of data recovery and mitigation of effects to artifacts and archeological sites is described. However, the economy of American Indian land and water resource use is generally not characterized at the same level of detail as the non-Indian economy. In addition, without enough reference to the cultural resources sections of project assessments in the sections on economic impacts, the cultural value of resources could be given less than adequate consideration in decisions made.

Thus, finding some way to bridge the gap between the information provided in the sections of reports dealing with cultural and natural resources, and the information in the economic sections of project assessments might improve the chances that American Indian cultural values for resources will be taken into greater consideration in decision-making.

The first section of this guidebook will explain the difficulties of putting actual dollar values on many of the resources valued culturally by American Indians. American Indian beliefs often assert the full integration of the spiritual with the physical, and the sacredness and interrelatedness of all creation. Thus, while some American Indian tribes or individuals are quite comfortable with putting dollar values on land and water resources, many other tribes or individuals find this highly offensive. Nonetheless, economists are often skeptical of the assertion that natural resources are infinitely valuable to American Indians, an assertion that would appear to follow from such beliefs. An examination of such criticism is offered.

The second section of the guidebook will discuss possible ways to bridge the gap between descriptions of the cultural importance of resources and their economic values. The first solution suggested involves two phases. The first phase is to ensure that those sections of assessments and reports that deal with the cultural and religious aspects of resources is detailed and complete enough to allow decision makers to have a good

understanding of the degree of the importance of the resources to the Tribe(s) in question. As will be explained, it may be necessary to supplement the cultural and social analysis sections of documents with other economically relevant information. The second phase is to ensure that these descriptions are thoroughly referenced in the economic sections of reports and assessments in order to ensure they receive the proper attention by decision makers.

The second solution suggested involves avoiding putting any values in monetary terms. Instead, all values would be described according to Meyer Resources' (1999) "Hierarchy of Needs" and five additional "non-Tribal indicators" (pp. 25-37).

The third suggestion is to obtain the agreement of the Tribe(s) to do economic valuations of their resources using one or more of several different econometric techniques. These techniques are described in general terms. The fourth suggested solution involves obtaining the agreement of the Tribe(s) involved to have a dollar value administratively assigned to the resources in question. Should such an agreement take place, some economic assessments could be used in order to aid decision makers with 'target' values.

It is recognized that none of these methods may ever fully describe the total cultural value of water resources to American Indians. However, tradeoffs are often necessary between projects and project beneficiaries. Such tradeoffs require an understanding of the relative value of the resources to all parties. The additional methods described in this guidebook are merely intended to enable decision makers to have a greater appreciation of the importance of water resources to American Indians than they may have had without the methods being employed. This greater knowledge and understanding should aid decision makers to make tradeoffs and decisions that result in greater benefits to the society than might have resulted without this understanding.

Of course, it is also understood that there are wide variations in religious and cultural beliefs and opinions between American Indian tribes, just as there are wide variations of similar beliefs among non-American Indians. It is hoped that the generalizations used to describe American Indian attitudes toward the value of resources are not seen as stereotypes, but rather as means by which to identify very common themes in many American Indian cultures. The purpose is to try to develop understanding between two (or more) very different cultures, in terms that the larger, non-American Indian culture can understand and appreciate.

Section 1: The Issue

Economic Valuation Techniques and American Indian Responses.

According to economic theory, there are aspects of all water resources that can be valued monetarily. For instance, there is an objectively determined dollar value of an acre-foot of water for the irrigation of a particular crop. To the extent that such monetary values accrue to American Indian economies they should always be determined and included in project proposals and documents required under the National Environmental Policy Act (NEPA). As these methods are thoroughly described elsewhere, they will not be repeated in this guidebook. (See The U.S. Water Resources Council's *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&Gs) 1983). Such dollar amounts are called *market* values because (usually) the free market assigns a dollar value to one unit of the resource.

However, many aspects of resources are not assigned a dollar value in the market. Some examples of *non-market* goods are: The fun and rest a family gains from rafting a river in a public park, the appreciation people have for a scenic view of farmland, and the joy and sustenance received when an angler brings back a good catch and shares it among his family and tribe.

Reclamation economists have attempted to elicit dollar values for non-market goods from American Indians using what are known as *Stated Preference Methods*. In these methods, the respondent is usually asked to accept or reject a suggested monetary value on some unit of a resource. However, in many cases American Indians have become offended by the suggestion of putting any monetary value on resources that have cultural and social importance. When asked to do so, the responses range from simple refusal to such statements as, "How much money would you be willing to pay to save your daughter from being killed?" (Meyer 2000, Mushinski 2000) Some Tribes have initially indicated a willingness to put dollar values on some resources, only to decide against doing so later in negotiations (Vinton 2001).

Likewise, if American Indians are generally affronted by monetizing resources themselves, they are unlikely to be receptive to such valuation by non-Indian survey respondents. This may be the case even though non-Indian respondees might believe American Indian resource uses are more valuable than the marketplace suggests and place correspondingly high values on those resource uses compared to other uses.

When American Indians refuse to suggest a dollar value for a resource, the non-Indian economic paradigm could interpret such a response in one of two ways. Either the value of the resource to American Indians is zero or it is infinite. Traditional economic thinking generally does not accept the implication of infinite values. Infinite values imply that everything else may be sacrificed in favor of the infinitely-valued resource.

Thus, there is a danger that American Indian values for the resource will be interpreted as non-existent instead of infinite (Ekstrand 2000, Duffield 2001).

The problem facing economists is that while American Indians would like to see greater weight placed on their cultural and religious values for their water and land resources, it may be very difficult to describe these values in dollar terms in a manner which is culturally inoffensive. As a result, even when projects are designed to provide greater resources to American Indians, some of the most important values to American Indians to be derived from the projects may not be measured in the same dollar terms as other aspects of the projects, such as the costs of construction and maintenance. This may give the erroneous impression that American Indian's do not have significant values for the benefits or costs of a project. As Meyer Resources explains,

These differences in perception of value [between non-American Indians and American Indians] pose strong risks that economists may culturally encapsulate project impacts on tribes. Too often in the past, economic valuation models have misrepresented tribal effects and damaged tribal interests. Alternatively, tribal values have not been treated substantively – and such values have been marginalized and appendicized in related reports¹. This has been damaging to reasonable consideration of tribal effects. (1999 p. 37)

American Indian World Views

Religious and cultural beliefs are at the core of the issue that is being discussed. Thus, it makes some sense that American Indian religious and cultural beliefs need to be understood to appreciate the issues at work. Of course, there is no one religion or culture among all American Indians, or indeed even among American Indians within the same tribe. However, there are very similar themes that run throughout quite a few of the American Indian religions.

One of the most common themes is to see all of creation as being related and interdependent. Thus, in most tribes it is considered fundamental for each member to maintain a balance and harmony with the world around him or her, even with the non-living world.

To support such responsibility, many American Indian religions assert that a creative force forged the world and all things on it. Subsequently, all things and beings have a certain degree of sacredness and all things and beings are interconnected. One author describes this belief system as “Unitheism” meaning that everything is sacred and the sacred is everything (Kaelin 1998). For instance, the Lakota frequently say, “Mitakuye Oyasin” (me-tah-KOOH-ye o-yah-SIN). The phrase means (depending on the

¹ U.S. Army Corps of Engineers, Bonneville Power Administration, and U.S. Bureau of Reclamation. 1995. *Columbia River System Operation Review: Final Environmental Impact Statement. Main Report.* p.2-21.

translator), "We are all related," or "Everything is one." In a similar vein, the Hopi claim that all archeological sites on their lands are sacred because they are all footprints of Mesawa, who is the deity that brought the Hopi up from the underworld (Coulam 2001). Hanes (1995) bases his entire analysis of the impacts on American Indians of the northern intermontane region of western North America on the premise that the relationship of American Indians to the land and resources is such that "the sacred is embedded in all natural phenomena" (p. 6). Below are several other statements explaining this belief.

...So I say that the Arapahoes and all tribes were religious people. Before the white mans' contact they prayed to God. According to the stories of the old people, they prayed to God because he was the creator of this world. So for that everything they did was in holiness, in sacredness; everything was this way with the Arapahoes.... (Friday, 1989, p. 1).

...Belief that the Sacred is present in all creation is the heart of traditional Plains Indian tribal religions. Knowledge of the presence of the Holy in all creation is the 'essence' of Plains Indian life. (Powell 1989, p. 48).

Among American Indians the sacred is... founded on the idea that it is an embedded attribute of all phenomena. For example, among the Lakota this attribute is *wakan*, whereas among the Algonkians it is *manitou*. Accessing this sacred attribute is a major ritual goal found in all American Indian cultures and entails actually entering sacredness rather than merely praying to it or propitiating it (Walker, 1991 p. 103).

Walker also states,

Throughout the Northern Rocky Mountain region, American Indian religious leaders attest that the geographical location of rituals is vital. Unless rituals are performed at the proper locations, they have little or no efficacy. In a literal sense the natural environment becomes an altar or church in these religions. Similar conceptions are recorded for other American Indian groups throughout the Northwest, Southwest, Eastern Woodlands, Subarctic, and Arctic regions of North America. It is the rule rather than the exception that American Indian ritual life is inextricably tied to the natural environment. (p. 110)

Traditional tribal members believe that elements of the natural environment retain their own spiritual essence and that man is an integral part of this system (Curtis 1992, p. 67).

For tribal people, who see the world as a whole, the essence of our work is in its entirety. In a society where all are related, where everybody is someone else's mother, father, brother, sister, aunt or cousin, and where you cannot leave without eventually coming home, simple decisions

require the approval of nearly everyone in that society. It is a society as a whole, not merely a part of it that must survive. This is Indian understanding. It is understanding in a global sense.” (Smith 1994 citing First Nations Financial Project 1991, p. 188)

Previous ethnographic studies, including those in this analysis, indicate that American Indian people often perceive cultural resources to be elements of a single whole. This epistemological premise is often expressed through the concept of the integration of humans, nature, and the supernatural. ...One implication of this premise is that Indian people perceive themselves to be a functional and essential part of the natural elements in their traditionally occupied lands. They perceive this relationship to have been caused by the supernatural (Stoffle and Evans 1990 pp.91-92). Traditional lands, therefore, are their Holy Lands. (Stoffle and Evans 1990 citing Spicer 1957 p. 92)

Justification for Resource Use in the Context of Unitheism

Note that Unitheism and cultural beliefs in the balance of creation do not preclude the use of resources, or even the destruction of some resources. Rather, Unitheistic beliefs require an appreciation for the balance between all creation. Thus, American Indians are free to hunt, fish, build, and gather so long as their activities are seen as not disturbing the balance between humans and all other creation. This is supported by Stoffle and Evans:

...these Indian people [in the 11 studies discussed] believe that they have a right to use the land because they have a supernaturally derived responsibility to care for it and to do so they must subsist as ethnic groups. Second, each American Indian ethnic group will have culturally prescribed procedures for using the land, plants, and animals. Southern Paiutes, for example, have use procedures that derive directly from the epistemological belief that the animals, plants, and even the land have a life force. These Indian people believe that everything has human-like rights, which derive from the human-like life force bestowed upon them at creation” (1990 p. 94).

Meyer’s experiences with American Indians and their beliefs are consistent with this.

“...my sense is that ...[American] Indians believe the beliefs and actions of people and animals, etc. occur in balance in the world. So it is necessary to respect each other – but also to take what we need from each other. If this is done in a respectful and balanced way, nothing more need be explained. This might be

considered a philosophy for living – of which spirituality plays an important – but not exclusive -- role. (Meyer 2001)

Skepticism

When confronted with these kinds of assertions, many economists respond that despite the professed sacredness of all creation, American Indians nonetheless have destroyed parts of the natural world in apparently disrespectful and wasteful manners. For instance, burning fields in order to increase the fertility of the field until all fertility was destroyed; and wasting whole animals or most of the meat on animals (Anderson 1997).

Along similar lines, Vernon L. Smith (1999), citing Paul Martin (1967, 1984, 1990), and others believes that it was the prehistoric predecessors of modern American Indians that killed off many species of game animals, including a larger, slower relative of the modern American Bison (Smith 1999, pp. 63-66). Implied in Smith's writing is that a major part of the reason for the extinctions is the wide use of mass kills, such as stampede jumps or traps, in which hundreds of animals could be killed (pp. 64-65). In such kills not all of the animals were butchered for food or other uses, and of those animals that were used, much of the animal was left to rot (Anderson, citing Baden, Stroup, and Thurman 1981).

Such wastefulness, it is argued, cannot support the contention that American Indians treat all creation as sacred. This argument might be seen to cast doubt on the legitimacy of American Indian claims that their resources are 'above' monetizing.

Finally, this behavior is seen by economists to suggest that some American Indians' refusal to put a dollar value on a resource is *strategic behavior*. Strategic behavior occurs when a respondent to a stated preference question does not answer with the dollar value they truly believe should be assigned to the resource. Instead, the respondent answers in such a way that he or she believes will either better benefit him/her or his/ her tribe, or answers in such a way that he/she believes will gain the approval of the interviewer. Such behavior can lead to problems with correctly valuing a resource using stated preference methods, such as the Contingent Valuation Method (CVM).

Responses to Skepticism

First, with respect to the assertion that American Indian use of resources has not demonstrated enough reverence for these resources to be considered sacred, prehistoric overkill might be explained by a combination of the theory of the Tragedy of the Common (Hardin 1968) and the relatively blunt and inefficient methods that were available to peoples primarily operating on foot, with stone tools, and with dogs.

Finally, in every social organization, there are “rogue” individuals who do not heed the pre and proscriptions of their society. The larger, non-American Indian society is a good example of this. People regularly disobey traffic laws, steal, lie, cheat, hurt each other, and destroy property and biota despite cultural proscriptions against such activity. Tribal admonishments to remain balanced with all creation may not be adhered to by every individual member of a tribe. Similarly, it clear not every individual American always adheres to the requirements of the Endangered Species Act or other environmental laws.

Now, with respect to the issue of strategic behavior, there is a good deal of reason why American Indians may choose to give strategic responses to questions regarding their values for resources. Historically, virtually all American Indian tribes have lost the ownership and/or control of large tracts of land and areas of water. In addition, pollution, dams, species extermination, and other environmental factors have led to tremendous decreases in the availability of traditional American Indian foods and resources, leading to significant negative affects on American Indian health and cultural stability. (Meyer Resources 1983; Prince 1993 pp. 39-246; Fluharty 1994 pp. 20-21, 25-33, 51; Hanes 1995 pp. 11-47; Narayan 1997 pp. 169-177; Young 1997; Barrington 1999b; Meyer Resources 1999 pp. 41-210; Neihardt 2001; Goldtooth 2001)

American Indians have often been subject to unfair or unequal trades. Within the 19th century, the 1888 Allotment Act was intended to make American Indians more agrarian by forcing individual Indians to buy or sell 160-acre parcels of their reservations. The land was so often marginal and water rights so thin that the only way to make any money at all was to sell the parcels of land to non-American Indians at well below market prices. Thus, American Indian reservations, which were already small portions of once enormous areas under American Indian control, became even smaller and tribes became more diverse as Indians left the reservation to find work (Prince 1993 pp. 193-268, Barrington, 1999 pp. 33-36, Neihardt 2001, Tribal Wisdom Foundation 2001).

There is also the issue of mineral leasing rights and other Trust Assets sold off by the Bureau of Indian Affairs (BIA) to non-American Indians, effectively limiting the use of and/or control of land and resources to American Indians. Frequently, these are sold at well below market rates. Thus, not only are significant portions of American Indian lands frequently under the control of non-American Indians, but the lands are often polluted and the compensation for the leases is inadequate. (Prince 1993 pp. 247-254, Barrington 1999 p. 36, Goldtooth 2001)

With this history in mind, it is understandable that American Indians may not be willing to suggest any dollar amount for the purpose of valuing their land and water resources. There would always be the threat that non-American Indians would offer the amount suggested in an attempt to buy the resource. History has demonstrated that government agencies will sell important Tribal assets for money. Thus, American Indians may be concerned that offering a monetary value for land and water resources would threaten these essential pieces of their tribal identities and cohesiveness.

This is not to say that stated preference methods are useless. Rather, it is incumbent upon any researcher using a stated preference method to develop the trust of the tribes studied. As Murray et al. has shown, in-person interviews with an interviewer who has developed a very good rapport with the tribe may be more successful than phone or other interviewing methods (1995). Other successful techniques and the advantages and limitations of the Contingent Valuation Method (CVM) and other Stated Preference Methods are discussed in Section II: What to Do?

Finally, note that strategic behavior on the part of American Indians does not mean that they have discarded their religious or cultural values. Refusals to assess a monetary value for resources may indicate that the degree of scarcity of important resources has reached the point that American Indians are willing to take unusual measures to save them.

Section II: What to do?

For better or worse we live in an economic world. That is, we live in a world in which choices must be made between different uses of resources when there are not enough resources to fulfill everyone's ultimate desires. For society to make the best decisions regarding the use of resources, it is essential to be able compare the impacts of different uses on the same criteria.

Although economics may be unable to provide a total value for American Indian resources that includes cultural and religious values, some economic methods are able to assess some amount short of this total monetary value. If even this is unacceptable, economics can at least provide frameworks for comparing alternatives and their impacts. Following are some suggested methods by which to accomplish these goals. These involve, (a) full descriptions of the importance of the resources to the Tribe'(s)' way of life, (b) using only such descriptions to compare impacts to both non-American Indians and American Indians, (c) obtaining the consent of the Tribe(s) to partially value the resources, and (d) obtaining the Tribe'(s)' consent to use administratively assigned dollar values.

Solution I: Ensure the Resources' Importance is Fully Described and Referenced

The first solution is simply to ensure that an adequate description of the cultural/religious importance of the resource is included in the report, Environmental Assessment, or Environmental Impact Statement, and that thorough references are made to these descriptions in the economic impact portions of the papers. Below are some details about accomplishing this goal.

First, it is important for economists to develop good working relations with archeologists and anthropologists working on the project. It helps to speak with the archeologists and anthropologists about providing information that will aid decision makers in assessing the relative importance of various resources by focusing on how the religious and cultural aspects of resources function in the current lives of the Tribes. It is a good idea to ensure that the social analysis of such reports (as in EA or EIS) are completed in such a way that economic information may be derived from them. Used in this sense, economic information may or may not be monetary (dollar value) information; a thorough description of the manner in which a particular resource plays a role in the tribal economy could be satisfactory.

It may be necessary to supplement these sections with indicators of value that can be more easily analyzed. A good example of this is Meyer Resources' *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs and Shoshone Bannock Tribes* (1999 p. 27).

Tribal Circumstances is based on Maslow's "Hierarchy of Needs" Model (1968). Maslow's model was originally developed for psychology, and intended as a model of a healthy individual's needs for physical, mental, and social fulfillment. Used by Meyer Resources, it is applied to the tribe as a whole.

The Meyer Resources framework is founded first on "Food and Shelter" which are derived from land, water, fish, game, plants, other resources, and trading and commerce. Next, there are "Safety Needs" derived from tribal control over territory and speaking the native language. The next level of needs are "Belongingness and Love" derived from the tribal family, communities and spirituality. Finally, "Self-Esteem" is derived from tribal control and self-sufficiency, and worthwhile activities.

In addition to these categories, five "non-Tribal Indicators of Tribal Circumstances and Potential Impacts" are described. These are: 1) Tribal poverty, 2) Tribal unemployment, 3) Tribal per-capita income, 4) Tribal health, and 5) Tribal assets and the associated values they produce. According to Meyer Resources, the Federal Court in *United States of America et al. v. State of Washington et al.* (1994) agreed to apply the first four Tribal health indicators. For each non-Tribal indicator, Meyer Resources also gave the corresponding data for non-American Indian peoples living in the area of study.

Let us go into detail about each 'non-Tribal' indicator:

1. **Poverty:** The U.S. Bureau of the Census provides the percentage of persons, and the groups of persons living below the poverty line.
2. **Unemployment:** Data can be found provided by both the Bureau of the Census and by the Bureau of Indian Affairs. The Census data is more rigorous but tends to overestimate employment. Meyer Resources offers unemployment figures from both Bureaus and uses it to draw the following conclusions, "...how it [unemployment] compares to Tribal circumstances at Treaty time - how it is related to unemployment levels for citizens in general at present - and how it may be affected by project alternatives." (p. 29)
3. **Per Capita Income:** Available from the U.S. Bureau of the Census.
4. **Tribal Health:** Meyer Resources practiced a four-part procedure to assess the health of the tribes:
 1. Gather data from cited sources to develop a baseline health and health services comparison between Tribes and non-Tribal residents... [in the affected area] and in the United States as a whole.
 2. Utilize historic information to contrast Tribal health today with that in earlier times.

3. Consult with health professionals at referent tribes to test a hypothesis recently discussed by Trafzer (1997), involving analysis of death certificates for Yakamas living on their reservation between the years 1888 and 1964....

All the elements surrounding mortality on the Yakama Reservation, including the destruction of food resources, are difficult to quantify, but we know they influenced mortality on the reservation throughout the twentieth century. As a result of the destruction of food resources, white invasion, treaty making, the Plateau Indian War, political subjugation, Christian conversions, forced removal, relocation, and the reservation system, Indians living on the Yakama Reservation suffered a social anomie or depression that contributed to ill health and death...

This is a condition that cannot be quantified or measured scientifically, but anyone—native or non-native—familiar with Native Americans living within the early reservation system will attest to its existence. It surely had some effect on Indian health and one's vulnerability to disease. It is known that Yakama people lived in abject poverty with substandard housing, inadequate food, poor water, few sewer facilities, insufficient health care, little economic opportunity, and limited political power... People lived to die and to die young... (pp. 1-9)

To gather further information concerning this hypothesis, expert health officials at each subject reservation, including Yakama, were asked the following questions.

*Is it your judgment that the hypothesis that the causal factors listed by Trafzer contributed significantly to Tribal ill health and death [is] historically valid for your Tribe?

*Have the present health circumstances on this reservation changed? If so, in what way?

4. Finally, during the study the same panel of experts on Tribal health were asked:

*Would continued loss of fisheries be expected to have any health effects on Tribal members? Can you categorize the effects that would be expected?

*Would restoration of Lower Snake River salmon be expected to have any health effects on Tribal members? Can you categorize the effects that would be expected?

(Meyer Resources 1999 pp. 30-31)

Virtually all of these indicators can be determined in most projects to be considered. The only necessity is to change small parts of the analysis and questions to better reflect the circumstances and history of the Tribe(s) in question.

Tribal Assets: Meyer Resources also values what are described as Tribal Assets. These are all of the natural resources under tribal control. These should not be confused with Indian Trust Assets (ITA) that have a specific definitions within the Department of the Interior, and for which specified procedures must be followed in EA, EIS and other reports. Meyer Resources' Tribal Assets are likely to be a larger group of resources than ITAs. This allows for the economic section to deal with all the impacts to the tribe in question, not just to the tribe's ITAs. Meyer Resources' procedure to value tribal assets is:

1. Identify trends in the availability to the tribes of Tribal Trust Assets (particularly, land, water, fish and wildlife) from contact times to the present.
2. Relate trends in the availability of these Assets, and the annual benefits flowing from them, to present **material** and **cultural** values provided annually to each referent Tribe. This assessment will consider the range of indicators discussed previously.
3. Examine the effect, if any, of Lower Snake project alternatives on Tribal Assets, and consequently, on the annual steam of values they produce at benchmark time periods. (p. 35)

Again, the same procedures can be used in almost any project assessment, with the appropriate project description taking the place of "Lower Snake" in the procedures.

Once the descriptions are completed in such detail as is necessary and acceptable to the Tribes involved, it is essential to then repeatedly and thoroughly reference them in the economic sections of the reports. It is at this point that adequate caveats be made indicating that the economic measures of value shown do not include the potentially significant cultural and religious values ascribed to the resources by the Tribe(s) involved. As a result, references to the archeological, anthropological, "Hierarchy of Needs," and "non-Tribal" indicators sections are made.

Finally, note that several new academic fields are beginning to address the issue of resource use and trade in subsistence societies. These new fields offer many insights into resource tradeoffs made by subsistence economies without the necessity to monetize the transactions. Other metrics, such as caloric intake, land area, etc. are used. It might aid the researcher to examine works by such individuals as Bruce Winterhalder

(University of North Carolina, Chapel Hill, Ecology Department), Eric Smith (University of Washington, Department of Anthropology and Smith 1991), Eugene Hunn, (University of Washington, Department of Anthropology), and Ricardo Godoy (2001), (as noted by Winterhalder 2001), and Jorgensen (1995). Addressing this new area is beyond the scope of this guidebook, but may be useful in the future.

Solution II: Utilize Non-Monetary Valuation Techniques for all Benefits and Costs

One potential solution to the incomparability of monetary and non-monetary values, especially across cultures, is to simply put all values in non-monetary terms. Thus, there will be no danger of greater attention and weight being given to one culture's values, or to one expression of values over another. Clearly, this could be labor intensive. However, it is not expected to be much more labor intensive than it would be to obtain the indicators listed in the first suggested solution. Of course, this technique may be offensive to non-Indian cultures in which monetary value are often quite important.

Solution III: Obtain Tribal Consent to Partially Value Resources

The Replacement Value Method (RVM), an adaptation of the Habitat Equivalency Analysis (HEA) (Skrabis 2001a), Stated Preference Methods, the Hedonic/Implicit Price Method, and valuing losses of way of life and pain and suffering, are five techniques by which analysts may derive values for culturally-significant resources. Each of these methods has the potential to be effective, either singly or in combination with one or more other suggested methods. However, note that all the methods have both advantages and drawbacks, and some methods may be strongly objected to by some, if not many tribes.

Use and Non-Use Values: Before discussing the individual methods, it is important to understand use and non-use values. Appreciating a resource even if one cannot experience it directly, is an example of what is called *non-use* values. An example of this would be the desire an individual has to know that an old-growth forest has been left undisturbed, even if this individual never sees the forest. There has been recent recognition in economics of positive monetary values for resources even when these resources are not directly or indirectly used. When a resource is utilized, such as for recreation or for irrigation, that utility is said to have *use value*. Traditionally, use values have been what are measured in economics. In order to directly measure both use and non-use values for a resource, researchers must use either a Stated Preference Method, or they must value the loss of a way of life and the pain and suffering from that loss.

Replacement Value Method (RVM): The RVM is perhaps the simplest of the methods, but one that provides a monetary value far short of the actual, total value of the resources to Tribe(s). The standard method is to calculate the amount of and kinds of foods and other resources the Tribe(s) obtain from the environment, and to determine the market value of foods and resources that could be used to replace them and that are available in the market. These replacement values are projected over the number of years of the project. Each project year's costs and replacement values are discounted back to the start year of the project, using the chosen discount rate (discussed below), and these discounted costs are then summed to arrive at a total replacement value for the resources.

One advantage of the Replacement Value Method is that it results in smaller, more discrete values than other methods, thus making its results more acceptable in the courts than other methods. Second, the method and the values received are easy to understand both for the researcher and the decision maker.

However, it cannot reflect some very important “use” and “non-use” values. The method is unable to capture values for the quality of the goods and services the natural environment provides. For example, it cannot account for the greater nutrition provided by game meats over domestically raised meats, when domestically raised meats are used as replacements for game. Thus, the RVM will necessarily underestimate the value of game meats to the Tribe(s).

Second, there may be no substitute good available on the market. For example, certain plants used for spiritual or medicinal purposes may not be sold in the market at all. Thus, it is left up to the judgment of the researcher what market goods, if any, to use as a basis of valuation.

Finally, this method cannot account for the social, spiritual, and “non-use” values associated with the resources. For example, it cannot account for the enjoyment experienced by traditional hunters in the field, the religious importance of special places in which ceremonies are held or places that have other cultural importance to the tribe(s), or the satisfaction received by non-American Indians that American Indians are able to practice their traditional lifestyles. For a more thorough discussion of the limitations of RVM in the context of subsistence societies, see Beckley and Hirsch (1997 pp. 19-22).

Habitat Equivalency Analysis (HEA): HEA has several of the advantages of the RVM, however it appears to come closer to a more accurate value for the resources lost. HEA was originally designed to offer Federal litigants in “Superfund” court cases a means by which to arrive at realistic, discrete, and quickly calculated values for losses of ecosystem services due to pollution (Unsworth and Bishop 1994). A modification of HEA may be able to be used for arriving at dollar values for land and water resources valued by American Indians.

As used in superfund cases, the method calculates the total amount of land and/or water impacted by the pollution and the resultant percent of ecosystem services that were lost due to the pollution, as determined by an expert ecologist or biologist. Then, for each year in the recovery process, the percentage of the ecosystem services that will remain lost is calculated up to the final year when as much recovery as can be expected will occur. The next step is for the ecologist/biologist to determine how much replacement land and water will be necessary to make up for the lost ecosystem services in each year from the start of the pollution to maximum recovery of the original land.

To obtain monetary values, the cost of obtaining each year’s parcel of land and the costs of the recovery plan are discounted by the agreed rate back to the project start year. Each discounted year’s costs are then summed to arrive at a total HEA value. For a more detailed and involved explanation, see Unsworth and Bishop (1994).

To apply HEA to American Indian land and water resources, one first needs to re-interpret “habitat” as traditional tribal land and water resources. Second, the percentage of “ecosystem services” lost or gained needs to be re-interpreted as a percentage of “societal services” lost or gained. The rest of the procedures should flow very similarly to those for ecosystems.

The advantage of this method is that a value can be obtained regardless of the complexity of the ecosystem or societal services that are obtained from, or inherent in the land and water resources. There is no need for expensive and elaborate study to determine the precise nature of such services. In addition, Skrabis (2001a) indicates that courts have upheld the use of HEA so long as the assumptions about the nature of the injury are correct.

The disadvantages of HEA are reflected in the assumptions necessary to use the method. First, it is assumed that the value of the ecosystem services are constant through time (Unsworth and Bishop 1994 p. 38). If this assumption is violated, adjustments to the valuations on a per-year basis will need to be made.

Second, it is assumed that the cost of replacement land and water resources, or the cost of their improvements do not under- or over-state the actual value of the original resources (Unsworth and Bishop 1994 p. 38). Applying this to Tribal resources, it is assumed that all resources on the land and in the water were in fact important, if not essential to Tribal health and well-being & none detracted from these. Should this assumption be violated, adjustments will also need to be made in the per-year valuations. It may be necessary to use a system in which the per-year percent reduction in “societal services” is weighted by the services’ relative importance to tribal and tribal member survival. This weighting system might be defined by the Tribe, or Meyer Resources’ *Tribal Circumstances* discussed above could be utilized.

Stated Preference Methods: In past attempts to obtain monetary values for resources with cultural value to Tribes, researchers have mostly attempted to use either a Stated Preference Method, such as the Contingent Valuation Method (CVM) (Peterson 2000), or the Replacement Value Method (RVM) (Beckley and Hirsch 1997). In the Contingent Valuation Method researchers generally utilize surveys or questionnaires that ask respondents either how much they would be willing to pay for an amenity they do not have, (called Willingness to Pay or WTP) or how much money they would insist upon receiving for an amenity they would give up, (called Willingness to Accept or WTA). The CVM is discussed at greater length in Carson (1999), Carson, Flores and Meade (2000), Ekstrand (1996), and Platt (2001).

Other Stated Preference Method techniques are available. Discussions of the possibilities for using such techniques are found in Murray et al. (1995), Adamowicz et al. (1998) and Haener et al. (2001). Alternative techniques include the use of calories or other numerical estimates of nutritional or resource value instead of dollar values (Adamowicz 2001), and the use of extensive in-person interviews with a researcher who

has obtained the trust of the members of the Tribe instead of paper questionnaires or phone interviews.

The advantage of such methods is that they theoretically can capture total resource values, including the “non-use” values of existence and cultural importance. The first disadvantage of note is the difficulty in amassing the time, money and resources necessary to successfully administer a high-quality survey. Currently, the Office of Management and Budget will not allow the use of the CVM unless expensive privacy issues are dealt with to their satisfaction. While this does not necessarily preclude the use of CVM for Reclamation purposes, it does put a significant burden on any researcher wishing to perform CVM.

Skrabis (2001b) also indicates that courts appear to be unwilling to accept future loss estimates based on CVM. Courts apparently object to the use of projections based on a “snapshot” in time.

Finally, as discussed previously, if CVM and other stated preference methods are to be performed successfully with American Indians, care must be taken to avoid either insulting the respondents or eliciting too many responses based on strategic behavior. One apparently successful CVM study was completed with a tribe in the northeast. This tribe was familiar with referendums, and thus the CVM study utilized a referendum approach to increase member’s comfort with, and response rate to the CVM questions (Skrabis 2001a).

In another study mentioned previously, the values determined were for forests used for traditional hunting (Murray et al. 1995). This study utilized a single interviewer who was well known to the members of the tribe. The interview sessions were similar to casual “chat” sessions with each of the sampled participants. However, despite the success of this study, the authors of this paper caution against assuming that such techniques will work cross-culturally. Native and Non-American Indian values found in this study were so widely divergent as to suggest that significant cultural differences would preclude the aggregation of the two groups’ values (Murray et al. 1995 p. 3). This inability to aggregate these values would in turn not allow the use of established economic analyses to compare the impacts of various forest management plans if they impact both non-American Indian and American Indian groups.

Duffield (2001) advises against using stated preference methods unless the analyst is experienced both with such techniques and with the Tribe(s) in question. Using such techniques is not recommended for inexperienced researchers.

Implicit price/Hedonic Method, Revealed-Preference/Hedonic Method, and Losses to Way of Life and Losses Associated with Pain and Suffering. Used in combination, values calculated from these methods may approach the total value to the Tribe(s) of their resources. The theory behind the implicit price/hedonic method is that if American Indians choose *not* to live like their non-American Indian neighbors, then the value of this American Indian lifestyle must be at least as large as the wages necessary

for non-American Indians to maintain their lifestyles in the same area. "Individuals choosing to participate in the subsistence livelihood reveal that it has a greater value to them than the wage foregone in a more market-oriented economy" (Duffield 1997 p. 105).

In the *Exxon Valdez* case Duffield made use of a 1987 'pre-spill' model on 98 Alaskan communities, the intent of which was "...to interpret the factors affecting the viability of subsistence economies." Duffield's results indicate

...a trade-off of about \$118 per pound of subsistence harvest (1982 dollars). Based on this value and the estimated total pounds of lost subsistence harvest over a 10-year post-spill period, the 411 natives claimed between \$24 million and \$44 million in losses with a mean estimate of \$34 million. (1997 p. 105)

The advantage of such a method over that of replacement value is that it acknowledges that choice of lifestyle expresses a value beyond simple physical survival.

Lind (1993) uses a revealed-preference-hedonic method in the same case to estimate "minimum per capita damage awards given different probabilities of long-term disruption to the Alutiiq way of life." The estimates of loss based on this method ranged from \$187 million to roughly \$1 billion (Duffield 1997 pp. 104-105).

Finally, Lind "...noted that pain and suffering awards often are based on value-per-statistical-life, which tend to be three to four times greater than the present value of expected future disposable income" (1993 p. 18, as cited in Duffield 1997 p. 106). This technique, too, is more likely to approach the total value of the resources to American Indians than others.

Valuing loss of life and loss of quality of life is not uncommon in the environmental economics literature. The U.S. Environmental Protection Agency must often use such techniques when comparing potential benefits and costs of various pollution mitigation programs (2000 pp. 88-90). Thus, there is good administrative support for the methods and some direction in accomplishing the methods. However, this author is not familiar with these techniques; it is advised that further research be conducted before attempting these methods.

Non-American Indians and Stated Preference Methods. Non-American Indians may be willing to complete CVM or other stated-preference surveys and offer dollar values for the preservation of American Indian resources for cultural purposes. While American Indians may still find this offensive, such a method may produce large values for American Indian resources because the average values found in the study will be multiplied by all households in the United States to produce an estimate of the total value to non-Indians. However, it is also possible that some non-American Indians may express negative values for American Indian resources.

Solution IV: Obtain Tribal Consent for Administratively Assigned Monetary Values

There is a possibility that American Indian Tribes might be willing to accept a trusted administrator's or expert's valuation of their resources, rather than stating a dollar value themselves. In such a situation, it is still likely to be necessary to provide the administrator with some benchmark values using one of or a combination of the techniques described above. Without some guidance it is possible that the administrator could lose perspective on what is an appropriate value. Also, it is usually necessary either in the courts or in assessment documents have some evidence justifying such decisions.

The administrator chosen should:

1. Understand enough about economics to appreciate that benefits and costs do not accrue in one year alone. That is, the administrator should be aware that values generally occur as a stream of benefits and costs over time. It is the net sum of the stream of benefits and costs that accrue over time that needs to be estimated. Such a stream of values ultimately can amount to quite a large sum of money and administrators should be prepared for such an outcome. In the *Exxon Valdez* case, it may have been the large value of the damages estimated by the experts working for the Alaska Native plaintiffs that caused both the judge and lawyers on both sides of the aisle to balk (Neher 2001, Duffield 1997 p. 109). In fact, a Federal judge recently overturned the \$5 billion award, stating that it did not meet the Supreme Court's 4:1 punitive to compensatory award proportion test. (Faegre and Benson 2001, and Kravetz 2001).

2. Be sensitive enough to cultural differences to understand that the same physical damages occurring in two different cultures could have different valuations. For example, Jorgensen (1995) and Duffield (1997) critique the judge's decision in the *Exxon Valdez* oil spill case to effectively exclude from consideration any compensation to Alaskan Natives for damage to resources that were integral to their cultures or to their culturally-derived expectations. Ultimately, the only damages the judge allowed were for replacement cost of lost food (1997 p. 108). Thus, care should be taken to select an administrator that will not misunderstand cultural sensitivities.

In the case when an administrator cannot be chosen, such as in the courts it is recommended that economic analysts read Jorgensen (1995) and Duffield (1997) thoroughly. Care should be taken to explain to the administrator in lay terms the logical underpinnings of damage assessments based on cultural differences.

General Comments about all Methods

Perhaps the most important statement to make is that no economic method is likely to succeed without the full cooperation of the American Indian Tribes involved. Taking the time to develop cultural sensitivity is essential to the success of any project, and is especially important when working with American Indian Tribes. *Protocol Guidelines: Consulting with Indian Tribal Governments* (U.S. Bureau of Reclamation, Native American Affairs Office 1998) is a good starting point.

In addition, it is very helpful to have an understanding of the preferred decision-making structure of the Tribe(s). Cornell and Kalt (1992), Champagne (1992), and Smith (1994) all suggest that economic development on reservations (and therefore Reclamation projects impacting reservations) will only be successful to the extent that Tribe(s) are a part of the decision-making from the start of the project, and will only be successful to the extent that the development project reflects and enhances their Tribal culture. It may be necessary to obtain the buy-in not only of a Tribal council, but also of the 'informal' decision making groups within the Tribe(s).

One final difficulty for the analyst may be drawing enough of a causal connection between the resources and their impacts on Tribal lifeways and health to convince decision makers to accept the values obtained using any of these methods. Ulrich (1988) suggests some methods by which to draw this connection. Meyer Resources' (1999) Tribal Health indicators described above investigates such a connection. Curtis (1992) also suggests such a connection. Medical science may be a good source for information. For example, see Young (1997) and Narayan (1997). The behavioral sciences, notably psychological literature is also likely to help in this endeavor. Finally, the work of behavioral ecologists, ecological anthropologists and others mentioned in the section describing non-monetary methods may be of some help in drawing causal connections between changes in control over land and water resources and changes in social health. Regardless, it is likely that future research will need to be done in this area to justify such linkages.

Conclusion and Suggestions for Further Research

Obviously, the issue of valuation of American Indian resources is contentious. However, some techniques are less likely to offend American Indians or to significantly underestimate their values for their resources. It is likely that the best method(s) need(s) to be determined on a case-by-case basis, but will probably be some combination of the techniques offered here. Even though valuation of American Indian resources may never be complete in the strictest sense, the approaches and analyses suggested in this guidebook will hopefully lead to more informed decision-making.

Suggestions for Further Study

Discounting: Meyer Resources gives an extensive discussion of the appropriate discount rate to determine the Net Present Value of the stream of future benefits and costs of a project (1999 pp. 32-35). A zero or negative discount rate has been suggested as a means to express the equal or greater importance to the tribe of future generations than the present generation. This guidebook does not address this matter. However, it is important to be aware of the theoretical bases of discount rates in order to choose an appropriate one. An excellent source is Portney and Wyant (1999). Examining Meyer Resources' discussion in addition to more traditional economic theory will give the analyst a better understanding of American Indians' perspectives on the role of time in present value calculations.

"Group" Versus "Individual" –Based Economies and the Inculcation of Public Goods Values on Individuals: Further research should attempt to define similarities and differences between the western economic concept of "individual trade," and the American Indian concept of "group trade" that can be seen in the frequent acts of gift giving in many American Indian cultures. For example, among the Tlingit of Alaska, such acts of gift giving are often means by which to increase one's social esteem in the kinship group or tribe. The expectation being that an individual who accumulates wealth will generously bestow many gifts among the kinship group and tribe. Thus "...The emphasis on the accumulation of wealth among the societies of the Northwest can better be characterized as a form of 'cultural capitalism,' rather than 'market capitalism'" (Champagne 1992 p. 200). Meyer concurs that "reciprocal obligation" can be a "powerful currency" among both Indians and Hawaiian Polynesians (2001).

Similarly, Jorgensen (1984 pp. 15-16, 1995 pp. 19-20), Brown and Burch (1992 p. 205), Glass, Muth, and Flewelling (1990 pp. 5-9), Hanes (1995 pp. 15-16), Beckley and Hirsch (1997 pp. 19-22), and Fluharty (1994 pp. 12-13) all indicate that equating market value with trade value is an erroneous enterprise for most American Indian Tribes. It is virtually impossible to separate out true market transactions from the frequent inter- and intra-tribal gift-giving, feast giving, good-will bartering, and other non-capital-accumulating activities.

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