

National EPA-Tribal Science Council (TSC) Fall 2011 Meeting

Hard Rock Hotel and Casino Tulsa
777 W Cherokee Street
Catoosa, OK 74015
Teleconference line: (866) 299-3188/2025648322#

December 6 – 8, 2011

MEETING SUMMARY

Tuesday, December 6, 2011 (Theme: TSC Orientation; Linking Mission and Priorities)

Welcome and Opening Remarks

Jeff Mears, TSC Tribal Co-Chair, Oneida Tribe of Indians of Wisconsin, Oneida, WI; and Ted Coopwood, TSC Agency Co-Chair, EPA, Office of Children's Health Protection (OCHP), Washington, DC

Ted Coopwood and Jeff Mears welcomed the participants to the meeting.

Invocation

Alfred Berryhill, Second Chief, Muscogee (Creek) Nation, Okmulgee, OK

Curtis Munoz introduced Second Chief Berryhill, who provided the opening blessing. Second Chief Berryhill explained that the Muscogee Nation is the fourth largest tribe in the United States with 73,000 citizens, 16,000 tribal employees and a 26-member Tribal Council, which will soon be reduced to 16 members. The Nation is led by Principal and Second Chiefs. The Nation, which maintains 16 ceremonial grounds, was relocated from the southeastern United States to eastern Oklahoma by Andrew Jackson. At that time, the Nation was a confederacy of 200 tribal nations, which were consolidated into 44 during the move. Only 16 remain today. The ceremonial grounds praise and honor "breath" (life) with fire because God originally came to the people with seven fires, which are representative of what God provides. Tribal members carry fire with them and try to kindle it in others to ensure that the fires remain lit.

Overview of the 3-Day Meeting

Bear Carrillo, Facilitator, DBC Consulting, Washington, DC

Bear Carrillo provided an overview of the meeting and the agenda, describing the logistics and meeting materials that the TSC members and guests had received. He described the two cultures within the TSC; one is results-oriented (EPA), whereas the other is relationship-driven (Tribal). It is necessary to understand the differences between the cultures to focus the discussion on science during TSC meetings. It is important to acknowledge the cultural differences so that accomplishments can be made in a manner that is beneficial to everyone. TSC members have worked through many past challenges together, and the TSC remains science-driven. The Tribal Science Priorities (TSPs) are an important component of this meeting.

TSC History: Our Past, Our Present

Curtis Munoz, Kiowa Tribe, Carnegie, OK

Curtis explained that the TSC was formed in 1999 at the request of the National Tribal Caucus (NTC) in partnership with tribal representatives to integrate Agency and Tribal interests concerning environmental science issues. The TSC provides a cross-Agency forum for Tribal and EPA scientists to discuss national

tribal science issues; the TSC also seeks to increase tribal involvement in EPA's scientific activities, building bridges between Tribal and Agency programs by focusing on priority tribal science issues. The current focus is the new TSPs. The mission of the TSC is to provide a forum for the interaction between Tribal and Agency representatives of mutual benefit and responsibility to work collaboratively on environmental science issues in a manner consistent with the EPA Indian Policy and trust responsibility. TSC members include one representative from each region with federally recognized tribes, plus a representative from the Alaska Native communities, and each EPA program and regional office. The co-chairs are Jeff Mears, Oneida Tribe of Indians of Wisconsin, Region 5, and Ted Coopwood, EPA OCHP.

The TSC's collaborative approach to solving priority tribal environmental science issues makes it unique. The TSC is comprised of EPA and Tribal Caucuses, which are important so that tribes have a voice to find the solutions to the problems that they face via a tribally centered approach. The TSC has identified TSPs that broadly align with NTC and Agency activities and interests and has coordinated with the NTC to integrate the TSPs into the Agency's annual planning and budget process. The collaborative approach provides support for partnership activities and leveraging of resources for tribal-specific projects.

The goals of the TSC are to: (1) develop a better understanding of the varying priority science issues for tribes across the country and EPA's ability to systematically and formally address these issues in a broad manner, (2) reach consensus on collaborative approaches for forming sustainable solutions with limited budgets and leveraging, (3) promote partnerships between Tribal and EPA scientists in the development and application of sound science that merge tribal traditions with science to bridge the gap between Traditional Ecological Knowledge (TEK) and Western science, (4) share EPA scientific products or activities relevant to tribes' priority science issues, and (5) facilitate communication and coordination with other agencies and organizations to more effectively respond to issues.

Curtis described several recent accomplishments of the TSC, including the identification of the National TSPs, organization of the 2010 National Tribal Science Forum, establishment of the Tribal Science Webinar Series and participation in the Advancing the Science of Cumulative Risk Assessment Workshop in July 2009 in Chicago, Illinois. Curtis provided his personal perspective on the TSC's history; the meeting at Haskell Indian Nations University was his favorite. The TSC members have the opportunity to visit Indian Country across the U.S. and share their stories with Agency headquarters. He is excited for the new group that is moving forward, and he explained that James Luedecke of the Quapaw Tribe was selected by the Region 6 Regional Tribal Operations Committee (RTOC) to be the new Region 6 TSC Tribal representative. The TSC has good hearts and minds to move forward.

TSC History: Science/Research Success Stories

Mike Durglo, Confederated Salish and Kootenai Tribes, Pablo, MT

To illustrate a tribal science/research success story, Mike Durglo showed the documentary *Tribal Waters: The Clean Water Act in Indian Country*. The documentary was funded by the Salish Kootenai College, the U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture, and the Northern Plains and Mountains Regional Water Program. The video describes how seven Montana tribes take authority from EPA to increase water quality in Montana. These tribes tailor their programs to address their specific issues. The state and tribes currently are working on a major restoration project on the Jocko River to restore the bull trout habitat. The *Tribal Waters: The Clean Water Act in Indian Country* video can be found at <http://waterquality.montana.edu/docs/tribalcommunity/tribalvideos.htm>.

TSC History: Our Future

Ted Coopwood, TSC Agency Co-Chair, EPA, OCHP, Washington, DC

Ted explained that the purpose of the TSP process was to establish a new set of national TSPs in Indian Country. The process was a collaborative engagement between EPA and tribes, with a coordinated effort

among the TSC Tribal Caucus and EPA programs and regions. It provided the broad engagement of tribes and the ability to address national priority issues at the community level. Proposed TSPs were required to fulfill at least one of the following requirements: (1) advance the field of Native American and Alaska Native environmental science, (2) provide methods to understand and address environmental issues faced by smaller Native American and Alaska Native populations, and/or (3) foster a new generation of Native American and Alaska Native researchers and scientists. Ted described the timeline of the process, which began in December 2010 with the establishment of an initial set of issues by the Tribal Caucus. Following this, the TSC and the EPA American Indian Environmental Office (AIEO) launched the TSP process and distributed information on the process to tribes. Next, the TSC engaged tribes through webinars, RTOC meetings and the NTC. Tribes submitted their top priorities to EPA by April 15, 2011. The Tribal Caucus then reviewed and prioritized the submitted priorities. In June 2011, the TSC identified “Climate Change” and “Integration of TEK in Environmental Science, Policy and Decision-Making” as its National TSPs. In July 2011, the National Tribal Operations Committee, NTC and EPA Administrator endorsed the National TSPs. The NTC Chairman reiterated NTC’s full endorsement of the Climate Change and TEK TSPs in a letter to the TSC on August 11, 2011.

The TSPs are being integrated into EPA research. For example, TEK will be included in the Office of Research and Development’s (ORD) Sustainable and Healthy Community Research Plan. In addition, there will be an emphasis on TEK in Office of Water research activities. OCHP’s climate initiative will include the development of tribal-focused climate change curriculum. To implement Climate Change and TEK TSPs in Indian Country, it is important to identify case studies and/or current tribal initiatives to address climate change and TEK at the community level. A focus is on vehicles of engagement to ensure that the next generation of tribal scientists is equipped to address scientific issues. The following questions must be addressed: What are the regional issues related to the TSPs that need to be addressed? What are the ways that tribes already are addressing environmental and health needs as they relate to TEK and climate change? What does implementation “look like” to be successful in Indian Country?

TSC History: Caucus Breakout Sessions

The Tribal and EPA Caucuses met separately to discuss issues surrounding implementation of the TSPs. Following the sessions, the TSC reconvened to hear the important points discussed during the Caucuses.

Prior to the report-outs, the Region 6 Regional Administrator, Al Armendariz, welcomed the TSC to Region 6 and Oklahoma. He explained that the TSC, NTC, Region 6 and EPA Administrator’s goals regarding climate change are intertwined. The heat and droughts currently occurring in Oklahoma and Texas are historic. American Indians and Alaska Natives are on the forefront of what climate change means. The droughts in Region 6 affect EPA permitting, and Administrator Lisa Jackson pledged that all Agency actions, including permitting, would be supported by sound science. Region 6 has dedicated tribal staff that are available if the TSC or tribal representatives need help.

Jeff provided a report-out for the Tribal Caucus as follows:

- Implementation is a process. Implementation is “to do.” The Tribal Caucus decided not to establish a definition for the term “implementation” because implementation will vary among tribes and definitions can be confining. Identifying implementation as a process provides an openness that allows each tribe to accomplish implementation based on its own needs.
- The steps of implementation are:
 1. Establish a baseline, perform vulnerability assessments, identify potential impacts, and perform adaptation and mitigation planning to include updates of emergency management plans.

2. Bring the level of response to a base level for all tribes through education and outreach, including education of Tribal Councils and governments and translation of data for the general public. Within this step, a climate change toolkit should be developed that highlights available resources and tribal success stories.
 3. Develop priorities based on the results of Step 1 (vulnerability assessments) and implement solutions to address these priorities.
- A true partnership between EPA and tribes is essential:
 - EPA must recognize tribes as equal and not treat them paternally.
 - EPA must experience issues in Indian Country first-hand by “being on the ground.”
 - Tribes must think creatively; EPA also must think creatively.
 - EPA program offices and regions must be more flexible and integrate climate change adaptation and mitigation into all media programs (i.e., existing programs must be re-examined and revised to include climate change).
 - A climate change component should be added to all Agency Requests for Proposals and incorporated into all of its grants.
 - Flexibility must be incorporated into funding to allow the tribes the flexibility to use them in the most beneficial manner to adapt to climate change.
 - It is important for TSC and EPA to work with other federal agencies, Tribal Colleges and Universities and their science groups, and the Institute for Tribal Environmental Professionals (ITEP) (e.g., climate change training).
 - Tribes are at different levels, which will affect implementation.
 - It is necessary to begin small (e.g., pilot projects) and then scale up.
 - EPA should provide tribes with the necessary tools to perform GIS mapping of climate change effects.
 - It is necessary to match science with traditional stories and TEK.
 - Economic effects of climate change must be considered.

In response to a question from Ted, Bear explained that the Tribal Caucus defined implementation as a process because it will vary so much among tribes. Using a process allows implementation to be individualized to the specific needs of each tribe.

Ted provided an overview of the EPA Caucus discussion:

- In terms of education and outreach, during the Spring 2012 TSC Business Meeting, tribal professionals can discuss implementation of climate change adaptation in tribal communities.
- EPA will not have all of the answers in regard to climate change and will need to leverage with other agencies to ensure that tribes receive what they need.

- EPA programs, projects and research are addressing climate change needs, but there will be limitations (e.g., Region 7 funding issues). Collaborations and partnerships can remedy these situations.

Felicia Wright added that it is necessary to implement a plan that describes how to make connections between tribal needs and programs already in place. Partnerships need to be explored and initiated.

Case Studies: What Does Implementation in Indian Country Look Like?

A Climate Change-Focused Organization

Jeff Mears, TSC Tribal Co-Chair, Oneida Tribe of Indians of Wisconsin, Oneida, WI

Jeff explained that the Oneida Reservation is about 65,400 acres, and the Tribe currently owns 37 percent of the land base. As of 2006, there were approximately 16,000 members, and 6,200 tribal members live on or near the reservation, which has multijurisdictional issues with various counties, cities, villages and towns residing within the reservation. The Tribe spends approximately \$10 million annually on land acquisition. The Tribe leases to several major companies, including Walmart and the Home Depot. Jeff highlighted the timeline that established the current Tribe, beginning with the 1838 Oneida Treaty, which predates the establishment of Wisconsin. It is important for the Agency to understand the unique challenges that the tribes face in terms of sovereignty.

Climate change consists of long-term, significant changes in temperature, precipitation and wind. Global warming is an increase in global average temperature. Global warming can drive climate change; the term “climate change” is preferred because it is more inclusive and descriptive. The Intergovernmental Panel on Climate Change has stated that global warming is unequivocal, and the federal government has stated that it is real. The doubts are political rather than scientific. Climate change effects in Wisconsin include hotter summers, with more than 20 days above 97°F, resulting in more air conditioning use, ozone and asthma attacks. More people die from excessive heat than any other weather-related event. Trends in Wisconsin include a decrease in Great Lakes water levels and native species and increases in algal blooms, beach closures, extreme weather events, pests, pathogens, disease, invasive species and water demands. Increased precipitation has caused local flooding in Wisconsin and the Midwest; the 2008 Midwest flood caused 13 deaths and more than \$6 billion in damages across Illinois, Indiana, Iowa, Missouri, Minnesota and Wisconsin.

Climate change causes human health impacts such as asthma, allergies, airway diseases, cancer, cardiovascular disease, stroke, foodborne diseases, vectorborne and zoonotic diseases, waterborne diseases, weather-related morbidity and mortality, and human development effects. Climate change focus should be on the “Balanced Scorecard” model. It is necessary to strategically organize institutions, including the Agency, so that every department includes climate change in budget requests and strategic planning. This effort does not have to cost anything, as existing staff can be utilized. The Balanced Scorecard is a management tool for organization strategy aligned with the vision of the organization. The balance is between financial measures and nonfinancial performance measures. In 2005, Oneida elected leaders, and management directed the organization to align with the national vision, realigning existing staff and programs. The focus must be on long-term adaptation rather than prevention; the “new normal” is adaptation and mitigation. The Oneida Tribe assigned climate change responsibilities to each of its existing divisions. The Tribe also surveyed six of its divisions to determine whether staff members think that climate change is real and whether anything can be done about it. Of the respondents, 60 percent held college or graduate degrees, and 65 percent were female. Results indicated that 70 percent agree that climate change is real and man-made, 75 percent say that it is happening now or will soon, and 81 percent responded that public policy and individuals can make a difference.

Jeff summarized that climate change is about adaptation and is an issue related to human health and social impacts rather than an environmental issue. Tribal governments differ from other types of governments, and the Oneida Tribe has a duty to provide services to its citizens, as do other forms of government. The educated, professional Oneida staff believes that a difference can be made, and the Balanced Scorecard model can be used to align organizations, encouraging use of existing staff to deal with climate change adaptation and mitigation. In 2008, the Potawatomi Chairman stated that, “If we do not protect Mother Earth, our children will have nothing. When we die, we want to know that we did everything we could to protect their legacy.”

At the end of the presentation, Jeff distributed the most recent Region 5 environmental priorities. He highlighted the fact that climate change had fallen from the top 10 and wondered if this was a result of current economic conditions.

Energy and TEK

Neil Patterson, Tuscarora Nation, Lewiston, NY

Neil Patterson explained that energy is the single most important priority, and it is necessary to examine and reassess energy sources to develop sustainable solutions. Humanity is entering the end of the “Oil Age,” a period of time in history beginning in 1859. The Oil Age can no longer be sustained, and new energy resources must be found. Neil told a traditional story from the 19th century, the take-home message of which was that changes are coming, and the onus is on the current generation to prevent negative occurrences that will affect future generations.

Neil explained that Native American words are polysynthetic, with each word telling a story. For example, one such word is *thkenaksewahyaks*, the name for the False Solomon’s Seal plant. *Thkenaks* translates to “red fox,” *ewah* to “it eats,” and *yaks* to “its berries.” The name of the plant provides TEK about the plant and the red fox. Science is represented in the language, which is not reductive. Nothing in Western science literature indicates a relationship between the red fox and this plant, but the Tuscarora have known about the relationship for thousands of years. Plant names describe the story of relationships; this is Native American science. Relationships in the natural world are recorded in the language, and the most important piece of TEK implementation is learning the traditional languages. The second piece is to understand the relationships being described in the language (e.g., Does the red fox still eat the plant? For what purpose? Medicine? Nourishment? Maybe the berries need to be digested by the red fox to germinate.)

It is necessary to know all of the components of the natural world in which humans are surrounded. Environmental protection must be holistic (food, art, song, and dance). TEK can be used as a reference for restoration. Place names contain descriptive references that can be used for restoration, so developing a tribal atlas with these place names would be a valuable resource to restore these areas to their past conditions. The Tuscarora Nation successfully integrated TEK into its Environmental Impact Statement by using oral history from interviews with elders to quantify impacts via the development of impact categories to be used by federal agencies. Neil recommended building the abilities of federal agencies to work together. It also is important to protect TEK from exploitation.

Huslia Traditional Knowledge and Wisdom: Community Sustainability and Adapting to Climate Change at Huslia on the Koyukuk River

Orville Huntington, Tanana Chiefs Conference, Fairbanks, AK

Orville Huntington presented a short video that he made about climate change in Alaska before explaining that subsistence is extremely important to Alaska Natives. Orville highlighted a language map of Alaska that illustrates the cultural differences in Alaska and the location of the community of Huslia. There is a close connection between ecology and culture, and the challenge is to maintain this connection

in the face of rapid climate change. The community used workshops and a tribal archive to document climate change on the nearby Koyukuk River. Climate change impacts that have been observed in Huslia include prolonged drought, increased riverbank erosion and constantly changing plant distribution. To combat these impacts and others, the community would like to identify and develop alternative, sustainable energy sources. Flooding events were common and associated with river ice breakup in the past, but now the floods are sparse and occur in late spring or fall. The community has had to adapt its subsistence activities to match what nature provides. To maintain access to cultural subsistence resources, the community must work closely with all land managers and emphasize cultural needs to ensure that subsistence hunting and fishing regulations work for the community. Huslia also examines environmental and social impacts, especially as local youths are struggling with social impacts as a result of climate change.

The adaptation strategies that have been developed no longer work because of the lack of ice, so to assist with climate change adaptation, the community tries not to leave a footprint or use the land for monetary gain. The community is working with Canadians to learn how to use fire to reduce fuel loads to prevent the unsafe wildfire conditions around the village that are occurring as a result of climate change. Although Huslia tried to prepare, the area was drier than expected, and a 60-acre wildfire occurred on May 29, 2005, within 2 miles of Huslia. The fire started from a contained landfill in which there was a then-new wildfire fuel reduction project started in 2004 to prevent this type of event from happening. The heat and drought created stress in the spruce trees, and the fire burned through the buffer. Currently, all that has grown back is grass; there is not enough organic matter to support the growth of the larger species that were lost in the fire. In 2006, the community worked with the U.S. Fish and Wildlife Service to further reduce fuels along the existing breaks, hiring local youths who worked as they were told by the elders, and the results were successful, as the expanded firebreak controlled a wildfire that occurred on May 17, 2007.

Erosion is another significant issue for the community. As the Koyukuk River rises and floods with spring snow melt, there is immediate and continuing erosion because of the lack of permafrost. Also, the erosion currently is much worse because snowmelt in interior Alaska happens more quickly than normal as a result of very warm spring temperatures. Because the river is wider and higher than normal, fish are not gathered, and youths have lost their jobs. The water temperature now is warmer in rivers and lakes, creating very unsafe ice conditions in winter. Also, the warmer water in spring and summer widens the river, further increasing erosion in most of interior Alaska. Huslia community members are moving their possessions, smokehouses and homes farther from the riverbank; the entire community helps each member move their belongings and structures. TEK and other tribal knowledge and wisdom from the elders are used to adapt to the changing climate; it is important to learn from the tribal language. The engineer-designed erosion control project failed within 1 year of being built, whereas solutions provided by the elders have had much more success. Federal and state governments must work with Native American tribes and Alaska Native villages to find sustainable solutions to long-term problems. TEK is a library of valuable knowledge that can be used to find long-term solutions.

Although the Huslia community has not traditionally undertaken formalized agriculture efforts, limited agriculture may be a long-term strategy that the community can consider to help replace declining subsistence-use resources. Domestication of animals is another possible strategy, but the community efforts to work with domesticated animals has met with limited success because of the culture of hunting and gathering that has been respectfully taught to each new generation by the elders. Future generations depend on the decisions of the current generations. Women are the strength of the Huslia community and act as teachers for future generations.

Joint Breakout Sessions

The TSC divided into two groups to discuss the Climate Change TSP and the TEK TSP. The meeting was recessed at 5:15 p.m. following the joint breakout sessions. An optional Tribal-Focused Environmental Risk and Sustainability Tool (Tribal-FERST) hands-on demonstration and experimentation session was held following the meeting for interested individuals.

Wednesday, December 7, 2011 (Theme: Linking EPA Science With Tribal Environmental Needs)

Tour of Cherokee Nation Facilities and Sites in Cherokee Country

The participants traveled to the Cherokee Nation Environment Programs to learn about the environmental efforts and cultural aspects of the Tribe. The TSC members also visited the Heritage Center.

Application of the Human Well-Being Index (HWBI) to Tribal Communities

Lisa Smith and Kevin Summers, EPA, ORD, Gulf Ecology Division, Gulf Breeze, FL

Lisa Smith explained that the Sustainable and Healthy Communities (SHC) Research Program focuses on research to provide communities and other levels of governance with data, methods, indicators, models and tools that they can use to develop efficient, effective and equitable approaches to increasing community sustainability and resiliency by maximizing co-benefits and minimizing unintended consequences. Sustainability, in terms of human well-being, is supported by three pillars—economic, environmental and societal well-being—which feed into basic needs and subjective well-being. Well-being is characterized rather than measured. It can be defined as a good or satisfactory condition of existence characterized by health, happiness and prosperity. Economic, social and ecosystem services flow from human, built, natural and societal capital. Social services are provided by people for the benefit of people, whereas ecosystem services are provided by the environment.

The three elements of well-being are economic, environmental and societal. Economic well-being is the sense of well-being derived from financial stability. Environmental well-being can be defined as the sense of well-being that is derived from the opportunities to experience healthy, natural environments (i.e., the right to clean air, land and water). Societal well-being includes a combination of well-being derived from having the opportunity to meet the requirements for healthy human growth and development (basic needs) and the perception of life as a whole based on opportunities and achievements (subjective well-being).

Lisa displayed a conceptual model highlighting the organization of how researchers are modeling well-being based on service flows, which influence well-being. For example, demand influences the flow of good governance. The model collectively examines the eight domains of well-being, including the domain of “connection to nature,” which is rarely found in the literature but is important. The modelers examine how well-being changes as a result of changes in the domains.

1. The domain of spiritual and cultural fulfillment is manifested in heritage, educational values, ecological knowledge, social relations and sense of place (e.g., festivals focused on the environment). Ecosystems provide nonmaterial benefits through spiritual enrichment, reflection, recreation and aesthetic experiences.
2. The leisure time domain includes time to voluntarily engage in pleasurable activities (i.e., “the good life”). The quantity and quality of time spent in nature is positively correlated with life satisfaction and relaxation.

3. The social cohesion domain includes the ties that bind humans together in society. For example, greenspaces in urban areas can promote pro-social behavior by reducing the negative impacts of crowding and urbanization.
4. The connection to the nature domain includes the innate, emotional affiliation of humans to other living organisms and the environment; access to diverse natural systems enhances well-being.
5. Outcomes of the education domain are derived from formal and informal transfer of knowledge. The environment is a natural learning facility, and transfer of ecological information enhances art, science and practical affairs.
6. The living standards domain includes the physical circumstances in which people live, the goods and services that they are able to consume, and the economic resources to which they have access. Living standards are significantly important to well-being, including the ability to earn money to afford basic needs.
7. The safety and security domain includes freedom from harm; once physical needs are satisfied, safety needs take precedence. Greenspaces are being investigated as a means to reduce neighborhood crime, and nature provides protection from natural disasters.
8. The domain of health, which generally is at the forefront of most well-being assessments, includes personal physical and psychological well-being. Studies show that access to nature provides restorative experiences that can improve psychological and physiological health.

To perform their assessment, the researchers combined professional opinions and perceptions to assess relationships between services and well-being; the general public also was surveyed. The method of developing relative importance values includes taking ranked data and developing priorities. Weighted factors are used to develop domain: element ratios. Lisa showed a chart that highlighted that the various viewpoints and values depend on the group responding to the survey. The researchers examined the contributions of domains within each element of well-being by developing confidence levels associated with how each domain contributes to well-being. The contribution of ecosystem services to the various domains is explored in the same manner. In the example of contributions to the health domain, no single service stands out; all of them are relatively equal and fairly important to achieving a state of good health. Ecosystem services is important to the domain devoted to the connection to nature. Within ecosystem services, the most significant contributors to connection to nature are water quantity regulations and greenspace. More specific details on the process can be found in the report, *Indicators and Methods for Constructing a U.S. Human Well-being Index (HWBI) for Ecosystem Services*.

The next step is to begin testing application of the HWBI at smaller scales and, in 2012, initiate work on an Index of Tribal Well-being in which the HWBI will be applied to tribal communities. The researchers plan to work with tribes to modify the HWBI for application to tribal communities beginning in 2013. This work will develop relative importance values, identify appropriate indicators, work with existing data, identify data gaps and establish benchmarks. The researchers will produce the *Final Report on the Index of Tribal Well-being* in 2014. The expected outcome is that tribal communities will be provided information and tools to evaluate sustainability in terms of overall human well-being.

Kevin Summers explained that ORD was aligning its research into six new research programs, including the new SHC Research Program. Administrator Jackson highlighted seven focus areas for the Agency early in her tenure, including environmental justice. Environmental justice currently is being added to the HWBI. The researchers are examining children's health and urban groups and determining how to adapt the HWBI to tribes in both specific and broad manners across the United States. The goal is for the adapted index to be scalable to regions and communities. The HWBI is not a static tool; rather, it

examines how decisions change the flow of service and what these changes mean. It is one metric for decision-makers to utilize in examining the potential impacts of alternate decisions. The researchers would like to partner with the TSC and those tribes interested in tailoring the HWBI to their specific needs to determine how to move forward in an appropriate manner that provides benefits to the tribes. It is important to gather relevant and accurate information regarding tribal thoughts in this area. The survey website is at <http://edu.surveymzmo.com/s3/738771/well-being-pairwise-assessment>.

Ted said that he would like to determine how the TSC can best help with ORD's efforts. Jeff was excited about this effort and agreed. Ted proposed a follow-up teleconference to discuss the next steps of what can and should happen to advance this effort. OCHP also probably would like to be involved. Kevin explained that he had spoken to Michael Firestone (OCHP) regarding the 85 indicators of children's health. These indicators should be consolidated because providing the public with 85 indicators would create confusion.

Neil asked what level of education was needed to respond to the survey. Kevin explained that most of the questions are based on perceptions; basic information is provided about more difficult concepts. Most of the questions involve pair-wise connections asked in a manner to ensure consistency. The survey provides a comparison regarding general perception of each individual element. Because professional perception generally leans toward topics for which funding is available, it probably is more valuable to determine the perceptions of the general population.

Patti Tyler asked Kevin to speak more about what will be done once the information is received. Kevin responded that this is not traditional EPA work. The original mandate was to determine the effects that ecosystem services have on well-being. The researchers, however, realized the need to address all elements but were unsure how to use the information within the Agency. It provides one metric for communities examining alternate methods to increase sustainability, allowing them to view the consequences of various decisions. The HWBI is one tool to evaluate and determine unintended consequences prior to making decisions.

Tia Chullakorn asked whether the tool was for EPA decision-making and how it could be used as a tool for the tribes. Kevin responded that the tool was not for EPA decision-making; it is for decision-makers in any type of governmental group (e.g., community, tribal, county, and neighborhood). This tool incorporates ecosystem services and environmental elements not present in other well-being assessments.

Finally, Lisa provided a demonstration of the website survey, highlighting sample questions.

Tribal-FERST Demonstration and Question-and-Answer Session

Ken Bailey, EPA, ORD, Office of Science Policy (OSP), Cincinnati, OH

Some members of the NTC joined the TSC for the demonstration.

Ken demonstrated the applications of Tribal-FERST and showed views of exposure/risk-related maps. AIRNow will be incorporated into the tool so that the tribes can examine data in real-time. The tool is populated with data, and the tribes can view a draft tribal data inventory. Caren Robinson noted that OCSPP is beginning to use the inventory regarding chemical sources, and Ken explained that the inventory includes links to website resources (e.g., fact sheets regarding issues of concern, satellite imagery). Caren asked whether there were links to information on grants, and Ken responded that there were.

Gerald Wagner (NTC Vice Chairman) asked whether the tool was related specifically to TSC issues or whether it crossed all media. Ken replied that Tribal-FERST can be applicable to TSC or tribal issues across media. As the tool evolves via ESRI and the GeoPlatform on which EPA's Office of

Environmental Information (OEI) is working, tribal members will be able to integrate it on their desktop and use their own data. Beth Jackson noted that it is helpful to observe how the Passamaquoddy Tribe used Tribal-FERST in practical applications.

Gerald asked about the protection of sacred sites and cultural data. Ken explained that data are not saved on EPA's servers; eventually, data will be able to be stored locally on the user's desktop.

Denise Jensen asked which agricultural databases were available within the tool. Ken replied that it currently is populated with EPA data but will eventually be linked to the databases of other federal agencies.

Gerald asked whether climate change impacts could be indicated by the readings. Ken explained that the tool cannot provide this information, which must be investigated by the tribes. The Passamaquoddy Tribe was able to determine the results and effects of wood-burning stoves because of the members' knowledge of their culture.

In response to a question by a participant, Beth explained that she would have to check with the GeoPlatform development team to determine whether state databases would be accessible. The participant asked whether the states could access tribal data. Ken emphasized that tribal data are not stored on the EPA servers and will remain only on the local desktop. The participant asked whether there was a requirement to save tribal data within the tool. Ken responded that there is no requirement to enter or save data; Tribal-FERST provides a clearinghouse of EPA and other federal data for the tribes to use on their reservations for environmental management.

Tia asked how the tool benefits the tribes. Ken replied that it allows the tribes to examine data visually, provides a significant cost savings and allows examination of layers of data among other benefits.

Orville asked what data are available for Alaska. Ken explained that it is difficult to obtain remote-sensing data in Alaska because of the tree cover; LIDAR has been used in the past.

Ted recessed the meeting at 6:56 p.m. An optional Tribal-FERST hands-on demonstration and experimentation session was held following the meeting for interested individuals.

Thursday, December 8, 2011 (Theme: Implementing the National TSPs Through National Strategies, Tools and Partners)

Development of EPA's New Climate Change Adaptation Plan

Joel Scheraga, EPA, Office of the Administrator, Office of Policy, Washington, DC

Joel Scheraga stated that EPA is dedicated to building a healthy, prosperous nation that can adapt to climate change in a sustainable manner. He is passionate about engaging the tribes in the development of the Agency's climate change adaptation plan. Because the climate is changing at an increasingly rapid rate and at a rate beyond historic experience, the past is no longer a good predictor of the future. Data indicate that temperature and precipitation will increase across most of the United States, and there will be increases in extreme weather events (e.g., droughts, flooding). There already has been a dramatic increase in storm events during the past 50 years.

The tribes know better how to adapt to a changing climate and EPA must learn from them. Climate change affects human health and the environment, including agriculture, water resources, infrastructure, wildlife and ecosystems. These changes pose serious risks to tribal communities; therefore, adaptation is essential. In the Northeast, climate change has impacted tribes as a result of changes in the composition of forests, invasive species inhibiting blueberries, ocean acidification threatening shellfish and loss of

medicinal plants. In the Midwest, there has been increased moose mortality, decrease in maple syrup supply and endangered fish as a result of algal blooms. Climate change has affected tribes in the Southwest in terms of drought, reduced amounts of drinking water and an increase in invasive species. Invasive species also affect tribes in the Rocky Mountain West area, as do changes in stream temperature and loss of unique species that affect the food chain. In the Pacific, tribes are affected by decreased rainfall, increased drought and wildfire, and the beginning of “water wars.” Those areas at higher latitudes are affected even more significantly, such as the village of Newtok, Alaska, which is affected by coastline changes in which landfills and cemeteries are being submerged underwater. Loss of these cemeteries is a horrible cultural loss. Species’ movements are changing, affecting the ability to find subsistence.

The outcomes that EPA is trying to attain based on its mission to protect human health and the environment (e.g., clean air, safe drinking water) are sensitive to changes in climate, and until now, the Agency has been able to assume that climate is relatively stable and that future climate will mirror past climate. The past, however, is no longer a good predictor of the future, and climate change is posing new challenges that make it more difficult for EPA and its partners to attain their goals and develop sustainable communities. The Agency and its partners must adapt; they must anticipate and plan for future changes in climate. EPA performed an assessment of the potential impacts of climate change on U.S. regional air quality and found that climate change should be considered by air quality managers as they develop air pollution control strategies because climate change has the potential to produce significant increases in ground-level ozone in many regions.

In 2008, EPA released a report, *Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems*, which was identified by *Discover* magazine as one of the top 25 stories of the year. The report concluded that climate change poses real risk to human health and the human systems that support the U.S. way of life. EPA views climate change as an environmental justice issue because children, the elderly, the infirm, the poor and tribal communities often are among the most vulnerable to climate health impacts. Therefore, efforts must be focused on these populations, and the theme of the adaptation plan is how to build adaptive capacity to deal with climate change effects. Administrator Jackson is the first EPA administrator to recognize that climate change mitigation is not enough and that adaptation is critical if EPA and the communities it serves are to attain desired environmental, human health and economic outcomes. Administrator Jackson acknowledged that climate change affects the Agency’s core mission. Climate adaptation must be “mainstreamed” into EPA’s programs, policies, rules and operations. The Agency is building adaptive capacity itself so that it can help the tribes and others build adaptive capacity.

EPA is exploring various “entry points” for integrating climate adaptation and is incorporating climate change trends and scenarios into rule-making processes, financial agreements, and scientific models and decision-support tools. These efforts will empower tribes to adapt. EPA Deputy Administrator Bob Perciasepe established a cross-Agency workgroup on climate change adaptation planning in January 2011, which has been charged with developing and implementing an EPA climate change adaptation plan that will set priorities for the Agency and lead to the development of program and regional office implementation plans. The goal is to release a draft plan by December 2011. The program and regional offices will engage tribes in the development of their plans. EPA has a strong commitment to engaging tribes early and often in the process because tribal input is essential for the development of an effective adaptation plan. The process included informal roundtable discussions with tribes in Regions 1, 6 and 9 in June and October 2011; the next step is formal consultation, which is expected to commence no later than February 2012.

Several sample insights were gained from the 2011 roundtable discussions:

- There is a need for reliable climate change data, information and decision-support tools.

- EPA can fill a valuable role by providing information and training (i.e., capacity building).
- Existing peer networks and councils (e.g., ITEP) can be leveraged to provide training.
- Collaboration with local universities could help fill some information gaps.
- Scientific uncertainties pose challenges to integrating climate adaptation into planning and operations.
- There is a general concern about climate change impacts on agriculture (through drought and plant pests).
- The federal government needs better coordination among its departments and agencies to avoid redundancy and conflicting actions.
- There is a need for more financial resources.

In June 2011, Administrator Jackson became the first EPA administrator to release a policy statement about climate change adaptation, which became the first step to mainstreaming climate change adaptation within the Agency. In September 2011, EPA completed a high-level assessment of the Agency's vulnerabilities to climate change for all program offices. The Office of International and Tribal Affairs assessment included an assessment of what climate change means for the tribes. In October 2011, guidance was issued to Agency Senior Resource Officials and the EPA Grants Customer Relationships Council encouraging programs to integrate climate adaptation into announcements of competitive funding opportunities (competitive assistance agreements). Based on these accomplishments, the outline for the climate change adaptation plan includes: (1) a vision of the future EPA, (2) known vulnerabilities of EPA's mission to climate change, (3) the process of mainstreaming climate change adaptation in EPA, and (4) measuring and evaluating performance. The Agency already has been developing decision-support tools for day-to-day adaptive management decisions by EPA and its stakeholders, including BASINS (Better Assessment Science Integrating point and Nonpoint Sources) for water resource managers.

There is ongoing EPA support for tribes coping with climate change, including Office of Air and Radiation grants focused on facilitating tribal climate change adaptation planning and communicating climate change impacts, STAR grants focused on issues in tribal environmental health and impacts from global climate change and cumulative risks, the Indian General Assistance Program (GAP) and so forth. Additionally, Executive Order 13514 established the Federal Interagency Climate Change Adaptation Task Force, one of the largest interagency efforts during the last several decades, which will provide recommendations for a national strategy, integrate resilience and adaptive capacity, and equip communities with information for local adaptation policies. The task force's initial report to the President provided five major recommendations, the first of which was that each federal agency should develop a climate change adaptation plan. As a result, 63 agencies and departments are developing plans, which are due to the task force in June 2012.

Joel closed his presentation with the following quote from Caleb Pungowiyi, Yupik Native: "We are the ones that live closest to the land, to Mother Earth. We live with it, we experience it with our hearts and souls, and we depend upon it. When this Earth starts to be destroyed, we feel it."

Jeff was pleased about the mandate to include climate change adaptation in all grants and that all federal agencies, not just those focused on land and the environment, were involved with climate change adaptation because the effects go beyond the environment to include social, economic and other aspects. It is important to plan future infrastructure that is not based on past climate. He highlighted the example

of Combined Animal Feeding Operations (CAFOs). Joel said that it was important to receive feedback such as this, and he was glad that parts of the plan resonated with Jeff. EPA is considering seriously how it can benefit from TEK and mainstream TEK into its adaptive strategy; it is time to bridge the gap between TEK and Western science. CAFOs are an increasing problem, particularly in terms of a changing climate. EPA is trying to address this issue via the regional implementation plans—as CAFOs generally are a regional problem—and is working with states and local communities regarding authority and incentivizing states to deal with CAFOs. Methods to incentivize the regulatory process are being considered.

Tia asked when a draft of the plan would be available to tribes. She noted that if the formal consultation began in February with the report being due in June that would be a short consultation period and asked whether it could be extended. She also is interested in inviting Joel to the Region 9 RTOC meeting. Joel said that the February estimate was conservative, and the process probably will start in January. As soon as the draft plan is completed, EPA will share it with tribes and any other interested parties. The Agency is doing its best to accelerate the beginning of the consultation process to allow enough time for tribes to provide input. If he is available, he would be happy to present to the Region 9 RTOC.

John Mosley asked when the NTC's tribal climate change workgroup would begin its work. Joel responded that David Guest is the contact for this entity and would know the timeline. He thought that there was a commitment to initiate it as soon as possible.

Neil said that climate change is about survival, and the Haudenosaunee have a different perspective. Documents and plans are not the answer. The Confederacy does not want more funding and, in fact, places the blame for current problems on money. Instead the Haudenosaunee would like three things to build capacity:

1. Access to natural resources that originally built TEK
2. Real survival skills that allow rebuilding of food, shelter and water
3. Cooperation within the community to accomplish these things

Joel agreed that it is important to determine what components are necessary to effectively build adaptive capacity. Comments such as these help the Agency to determine where to target its efforts. Joel agreed that documents are useless if they are not acted on, and he had insisted to Administrator Jackson that implementation plans be required of the program and regional offices so that they did not become just more documents sitting on shelves. Program and regional offices across the Agency must identify specific actions regarding climate change adaptation and will be held accountable for achieving them. The guidance to include climate change adaptation in grants requires that financial resources be targeted toward the problem. The Interagency Task Force heard from the tribes that funding was needed, but one tribe indicated that there was a good deal that could be done to adapt to climate change with current funds if they were used in a different manner from in the past.

Denise cautioned that many tribes are adapting their programmatic activities to comply with the Agency's seven priorities to increase their chances of funding; instead of the tribes trying to "fit into EPA's box," the Agency should truly listen to tribes and determine how EPA's priorities can fit in with the tribes' priorities. Guidelines need to be reviewed and amended to include flexibility for tribes to be able to use funds for their needs. For example, following flooding in her region, the use of water quality funds for soil samples was denied, even though the samples were directly related to the issue of water quality. Joel explained that it is not EPA's intention to make tribes and other entities think that climate change is another priority that they must "add to their plate." The goal is to change the Agency culture so that the question to tribes always is, "What are your priorities, independent of climate change?" EPA is

committed to working with tribes on the aspects of tribal priorities that are susceptible to climate change. After these have been identified, EPA will work with tribes on adaptation. The Agency also can provide technical assistance to communities and tribes to help them adapt via the Community Action for a Renewed Environment (commonly known as CARE) program. The Agency is encouraging program and regional offices to increase their flexibility, but legal authority also must be considered. The Office of General Counsel (OGC) is working to understand the legal flexibility that the Agency possesses to be able to perform activities to effectively adapt to climate change.

Curtis asked for information about Oklahoma-specific signs of climate change to present at an Oklahoma climate change meeting occurring on Monday, December 12, 2011. Joel explained that there were changes in seasonal patterns and migrations, extreme storm events, hurricanes and tornadoes. Climate affects human health and environmental outcomes in various ways. He explained that EPA has developed climate change impacts lists separated by region, and he will send the Region 6 list to Curtis via e-mail by the start of his meeting the following Monday.

Tribal-FERST Panel Discussion

Moderator: Joseph Schubauer-Berigan, EPA, ORD, Washington, DC

Allison Martin thanked everyone for their feedback regarding the Tribal-FERST tool; she currently is organizing and synthesizing the information that has been received. Phase 1 of the feedback period ended on November 23, 2011, so that she could address the initial feedback during this meeting. She still is collecting feedback from tribes, regions and programs. A good deal of the initial feedback was in regard to maps; once Tribal-FERST is integrated into the OEI GeoPlatform, it will be a visually based tool. The team is examining how the data can be visually presented within Tribal-FERST. Comments also focused on the fact sheets and how they can be incorporated with the maps to increase their usefulness. ITEP suggested adding a climate change fact sheet. In terms of risk communication, there is a need for an enhanced conversation on perceived risk.

Allison and Ken posed the following questions to the TSC members: What type of visual presentation would tribes like to see (e.g., fish tissue data)? What fact sheets do tribes want to see? How should Tribal-FERST serve to connect tribes? Are there any ideas on risk communication? What data would tribes like included in the database? How do tribes want to handle quality control of data received from tribes willing to share their data? Are tribes interested in the development of a Quality Assurance Project Plan (QAPP) to ensure data quality? What science is needed to address tribal environmental issues? How do tribes want to use Tribal-FERST to address specific environmental needs in their communities? TSC members can provide input on these questions via e-mail; input on the permanent name for the tool also is being sought. Ken noted that the lessons learned by the Passamaquoddy Tribe via Tribal-FERST could be used by other tribes.

Beth explained that Tribal-FERST is one of a small number of EPA tools/projects scheduled to be integrated with the OEI GeoPlatform so that the regions can leverage geospatial data. The effort is slowly being rolled out so that programs and regions can leverage existing tools. If states make their data accessible via ESRI, the data will be accessible in the GeoPlatform. Those entities that charge for their data or have additional requirements or restrictions for use will not be included. TSC members can send any specific dataset requests to Beth via e-mail. The goal is for data to be available centrally so that all media data are accessible.

Ken noted that tribes can help ensure that the shapes of their reservations are correct in the database. Beth added that the GeoPlatform team is working with external Indian agencies and the EPA Regional Indian Coordinators to ensure the quality of the boundaries; EPA does not have the authorization regarding reservation boundaries, as the Bureau of Indian Affairs (BIA) is the official authority. AIEO is working as a liaison with the BIA to resolve any discrepancies.

Tia asked whether the tribes would be expected to develop the QAPP(s) because U.S. Geological Survey (USGS) data do not follow EPA QAPPs. Beth noted that there is a good deal of USGS boundary data (developed for BIA) already included in the database. The available data will be fluid as the GeoPlatform is developed.

Curtis noted that there is a significant amount of Clean Water Act Section 106 data for Oklahoma tribes and asked whether Oklahoma's Blue Thumb Program would be able to upload data in the future. Ken replied that if the data are from off-reservation, it could be uploaded to C (Community)-FERST and then accessed by the tribes.

Joe Schubauer-Berigan asked how metadata were being dealt with. Ken replied that the team is working on metadata issues, and metadata are being developed through OEI that will address the boundaries received from other agencies, which should help with quality assurance. In response to a question from Joe, Ken responded that help with quality assurance issues would be available.

Neil discussed identification of healthy versus contaminated areas in terms of advisories for subsistence activities. Allison said that the development team was discussing whether state advisories are helpful for tribes, and many possibly are not because not all of them consider tribal diets. In cases in which state advisories are not helpful, what data can be integrated that are helpful? Joe briefly described the MERGANSER model, which focuses on mercury assessments in New England. It is a spatial model that possibly could be included, and researchers are seeking funds to expand it beyond New England. Neil thought that advisories by species might be helpful; too much information can be detrimental as well. For example, if tribal members believe that their medicinal plants are contaminated, they may be less effective as a result of a reverse placebo effect. Beth noted that some tribes have created their own advisories based on tribal consumption and cultural aspects that are taken into account. For example, the Minnesota Chippewa Tribe adapted the EPA guidelines to its needs. Ken added that the MERGANSER model was created to provide alternative fish species for consumption and incorporates 40 variables around each water body.

Fred Hauchman asked Ken to elaborate on how Tribal-FERST can help with economic development, a point Ken had mentioned earlier. Ken explained that the Passamaquoddy Tribe used the tool to examine waste flow out of the reservation to ensure the most beneficial use from the waste collection vehicle. The tool has provided the opportunity to also expand the water facilities to other communities. Fred said that tools that have economic benefits receive attention from decision-makers, and more funding might be available if this aspect of the tool was expanded on and communicated.

Joe asked whether there were training opportunities to learn more about the tool. Ken responded that the team had discussed creating a webinar tool that teaches how Tribal-FERST runs through a scenario. There is the possibility of providing training to large groups of tribes (e.g., at an RTOC meeting) if requested and if funding is available. The team will do its best to provide training in large-group settings. Brenda Groskinsky suggested gathering large groups in one room to watch the webinar. She added that Brownfields provide an opportunity for the development of standardized QAPPs. Fact sheets can be a mechanism to facilitate sustainable development, especially in terms of abandoned or hazardous properties (e.g., Brownfields). Joe agreed that a Brownfields data layer would be helpful; it would be beneficial if Brownfields could be utilized in green infrastructure. Denise added that historical maps and data of Brownfields areas are a vital component; it is important to know what the land was like in the past to help with restoration.

Joe asked how photographic data were managed in Tribal-FERST. Ken responded that photographic data can be added if they are available; the photographs can be embedded as links on the map. Brenda added that historical information is very important to tribes along the Missouri River in their restoration efforts.

Katie Renwick suggested using ITEP to facilitate hands-on Tribal-FERST training. Tia added that ITEP is holding another webinar and climate change conference in 2012. ITEP would like the TSC's assistance and has offered to provide assistance to the TSC. Joe said that the previous ITEP climate change webinar presentations are available at http://www4.nau.edu/itep/climatechange/docs/NCA_TribalWebinarPresentation.pdf.

Allison encouraged the TSC members to let her know how Tribal-FERST could best support the tribes.

NTC Meeting Report-Out

Jeff Mears, TSC Tribal Co-Chair, Oneida Tribe of Indians of Wisconsin, Oneida, WI; and Ted Coopwood, TSC Agency Co-Chair, EPA, OCHP, Washington, DC

Ted and Jeff presented at the NTC meeting taking place in the room next to the TSC meeting. Ted reported that they discussed the importance of the relationship between the TSC and NTC in dealing with relevant issues. He promised the NTC that the TSC would share information about its activities. They also discussed how the TSC and NTC could coordinate their many climate change efforts to provide solutions.

Jeff agreed that the meeting went well, and he thought that they were on the right track regarding tribal climate change implementation. The TSC will be involved in the NTC's climate change workgroup. Ted noted the importance of paying attention to tribal elders and not lose what they bring to the process. The NTC is satisfied with the work that the TSC is performing and would like to foster relationships between the TSC and other NTC groups to work on priority issues, such as the TSPs. Bear added that it is important to include oral traditions and stories, and it would be beneficial to hold a training session on oral history and TEK.

Whole Group Discussion: Implementing Climate Change and TEK Priorities

Ted reported that the TEK group had reviewed the "Proposed Implementation Strategy and Potential Measures of Success" section of the TEK TSP document to discuss the concrete steps for implementing the TEK TSP. Potential steps are as follows:

1. Return the land and water to the tribes; the tribes need the environmental resources on which TEK is based.
2. Ensure that a system is in place for EPA decision-makers that require them to contact tribes when developing a permit or process that impacts tribal lands. A regional consultation program should be developed that outlines who to contact when considering decisions affecting each specific region.
3. Communicate TEK success stories to EPA so that the Agency can understand and be a part of the solution.
4. Develop workshops to train EPA staff members in TEK.
5. Add information about TEK to EPA's training "Working Effectively With Tribal Governments."
6. Use information actively on the ground; allow the tribes to create and use a database for consultation.
7. Encourage the tribes to develop internal policies on what information to release and which to protect.

8. Change EPA policies regarding permit writing and reviews so that the Agency is required to use the appropriate and available TEK information.
9. Develop a specific TEK-focused project for the ecoAmbassadors program. Marissa McInnis can be contacted to develop a process for TSC involvement. The project can be used as a conduit for TSC involvement to ensure that TEK is included in ecoAmbassadors projects.
10. Write a project description for a summer Greater Research Opportunity (GRO) Fellowship.
11. Focus on the two deciding questions when working with TEK: What does EPA need to understand the value of TEK? What do the tribes need to use TEK in communities and train EPA in TEK?
12. Develop a pilot study to document important resources.
13. Learn treaty agreements and laws that prevent the tribes from using resources so that EPA can be an advocate for the tribes, particularly in state disputes.

In terms of Item #1, John added that TEK should be incorporated into water quality standards as beneficial use (e.g., spiritual, ceremonial); this has a place in permitting or Treatment as a State considerations.

In terms of Item #2, Patti asked whether such a system already was in place. Ted responded that he thought that a flagging system to notify the tribes when affected by permitting needed to be established. Beth thought that the TSC could determine what processes currently are in place and what elements need to be added to ensure the success of the system.

In regard to Item #5, Beth asked which entity owned the training. Ella Mulford responded that it was owned by AIEO and the Office of Management & Budget with DOJ paying the fee for free access to the training.

In terms of Item #9, Patti explained that currently there are eight tribal ecoAmbassadors, six in Region 8 and two in Region 9.

Patti stated that, in regard to #10, this is another great opportunity, and project descriptions are being collected. The TSC could be involved in a TEK project if a host institution could be found. Brenda added that GRO is an important program as there are so few undergraduate research opportunities.

In response to Item #13, Brenda suggested that the EPA Caucus time during business meetings could include training regarding the federal consultation process, reading of treaties to become familiar with the language and/or presentations providing an overview of trust responsibility. John noted that states have an inherent trust responsibility because they accept federal funds. Knowing relevant TEK information on state lands would be pertinent to making permitting decisions. Beth stated that OGC is determining whether states must perform a tribal consultation in instances in which the Agency has given them primacy authority.

Jeff provided the report out for the group focused on climate change. The discussion included two methods to implement climate change considerations:

1. A strategy of short-term actions that can be taken in which EPA and the TSC serve as liaisons with other existing groups, promoting dialogue on climate change issues, potential actions,

available tools, planning and so forth. The TSC will communicate with AIEO and the NTC that a region-by-region discussion regarding climate change effects across the country is needed.

2. Include tribal perspectives on climate change as an element in sustainability initiatives on which EPA is working with other federal agencies.

Ted asked the TSC members what the appropriate next steps are for the Council. John thought that the TSC should focus on climate change adaptation. Beth agreed and added that the TSC could embrace Joel's timeline and inform the tribes about what is ahead regarding the climate change adaptation plan. The Tribal Caucus can determine TEK language.

Mike noted that the BIA has a solicitation for vulnerability assessments grants in the amount of \$50,000; USDA and the U.S. Department of Housing and Urban Development have similar grants. Grants can make these assessments accessible to the tribes.

Tia thought that a next step was to enhance the ability to work with other groups. The TSC must work with Agency climate change and water scientists.

Jeff explained that the Oneida Tribe developed comments in response to the GAP Guidebook to stimulate discussion, and other tribes followed. The TSC can stimulate discussion in a similar manner on the climate change adaptation strategy. Each tribal representative should be responsible for encouraging the tribes within his or her region to provide comments. Denise stated that her region has a reliable system in place for disseminating information from regional representatives. She will encourage the tribes in her region to comment on the draft climate change adaptation plan because it is the first chance to provide input. Monica said that she would ensure that the TSC members receive information about the EPA draft climate change adaptation plan once it is released so that the tribal representatives can disseminate it to their regions. It will be helpful for the TSC to facilitate tribal feedback and take the opportunity to engage the tribes early in the process.

Beth suggested that the TSC develop an "Implementation of TSPs" guidebook to ensure that everyone understands their responsibilities and the timeline.

Allison said that the next step for Tribal-FERST was to hold a development team meeting to address the feedback that has been received and evaluate short- and long-term methods to incorporate the changes and integrate the GeoPlatform. She will continue to collect feedback on Tribal-FERST.

Ted said that the TSC could work with David Guest and the NTC regarding TSC EPA and Tribal representation on the NTC climate change adaptation workgroup. It is necessary to ensure that the TSC provides the right representation. The next steps will be to coordinate with the NTC and determine short- and long-term visions of implementation establish who will be responsible for what work and identify the expected outcomes.

Monica asked the TSC members to examine the TSC organizational document and provide suggestions for improving and updating it in terms of roles and responsibilities of the TSC members and the TSC's relationships with other entities so that it reflects where the TSC is now. Bear stated that the mission statement needs to be updated, and the membership may need to be diversified.

Bear will facilitate six Tribal Caucus teleconferences to obtain input regarding content of the revised TSC overview document.

TSC Spring 2012 Meeting: Proposed Dates and Tribal Host

The TSC members discussed the importance of rotating the meeting throughout Indian Country and listed the locations of past meetings. Patti noted that current regional travel budgets are prohibitive and requested that virtual meeting avenues be discussed. Monica reminded the TSC of the importance of traveling to Indian Country; implementing both face-to-face and virtual meetings would be cost-prohibitive for her office. Brenda commented that if the meeting was held in an EPA facility (e.g., EPA Las Vegas), the virtual aspect would be less cost-prohibitive. Mike suggested providing a training day during the meeting to justify the cost and allow training funds to be used. Monica explained that this had been done for the Spring 2011 TSC Business Meeting, and her plan was to implement the same strategy for the Spring 2012 Business Meeting. The meeting will be held the week of June 11, 2012.

The following locations are possibilities, and Monica will research the facilities and cost of each:

- Albuquerque, New Mexico.
 - Possible host: Pueblo Tribe.
 - Training opportunity: Yes.
- Denver, Colorado.
 - Possible host: Ute Indian Tribe.
 - Training opportunity: Patti will determine.
- Las Vegas, Nevada.
 - Possible host: Las Vegas Paiute Tribe.
 - Training opportunity: Yes (Tribal Air Monitoring Support Center in Nevada).
- Palm Springs, California.
 - Possible host: 29 Palms Band of Mission Indians.
 - Training opportunity: Yes.

The TSC identified the following topics for training:

- TEK
- Treaties/rights (cultural awareness and history)
- Climate change (ITEP)
- Grants training from the Office of Management and Budget
- Region 7 federal Indian history and law and TEK (cultural panel with tribal elders from various tribes)

Ted announced David LaRoche's retirement from the Agency, recognized Curtis' service to the TSC and noted that it was Allison's birthday. He thanked everyone for their beneficial discussion of implementation and specifically thanked Bear for his facilitation and Allison, Monica, Donna Jackson and Kristen LeBaron for their efforts toward the meeting. Bear adjourned the meeting at 2:41 p.m.

TSC Action Items

- ✧ Monica will ensure that the TSC members receive information about the EPA draft climate change adaptation plan once it is released so that the tribal representatives can disseminate it to their regions.
- ✧ Tribal representatives will encourage the tribes in their regions to provide input on the EPA draft climate change adaptation plan.
- ✧ The TSC will develop an "Implementation of TSPs" guidebook to ensure that everyone understands their roles.

- ✧ The TSC will continue to send feedback on Tribal-FERST to Allison.
- ✧ The TSC will appoint EPA and Tribal representatives to serve on the NTC climate change adaptation workgroup.
- ✧ The TSC members will examine the TSC organizational document and provide suggestions for improving and updating it in terms of roles and responsibilities of the TSC members and the TSC's relationships with other entities so that it reflects where the TSC is now. The mission statement also must be updated.
- ✧ Bear will facilitate the six Tribal Caucus teleconferences to obtain input on the revised TSC overview document.
- ✧ Monica will provide cost estimates for each of the four suggested Spring 2012 Business Meeting locations: Denver, Albuquerque, Las Vegas and Palm Springs.
- ✧ Monica will investigate providing training during the Spring 2012 Business Meeting on at least one of the suggested training topics.
- ✧ Patti will determine what training facilities are available in Denver.

List of Attendees

TSC Agency Representatives

Kai Tang
 Ella Mulford
 James Leathers
 Brenda Groskinsky
 Stanley Holder
 Patti Tyler
 David Guest
 David LaRoche
 Theodore (Ted) Coopwood
 Elizabeth (Beth) Jackson
 Caren Robinson
 Joseph Schubauer-Berigan
 Felicia Wright

EPA Region/Program Office

Region 2
 Region 5 Alternate
 Region 6
 Region 7
 Region 7 Alternate
 Region 8
 AIEO
 OAR
 OCHP
 OEI
 OCSPP
 ORD
 OW

TSC Tribal Representatives

Neil Patterson (Tuscarora Nation)
 Katie Renwick (Eastern Band of Cherokee Indians)
 Jeffrey Mears (Oneida Tribe of Indians of Wisconsin)
 Curtis Munoz (Kiowa Tribe)
 Denise Jensen (Winnebago Tribe of Nebraska)
 Mike Durglo
 (Confederated Salish & Kootenai Tribes of the Flathead Reservation)
 Sirirat (Tia) Chullakorn
 (Kashia Band of Pomo Indians of the Stewarts Point Rancheria)
 John Mosley (Pyramid Lake Paiute Tribe)
 Orville Huntington (Tanana Chiefs Conference)

Region 2
 Region 4
 Region 5
 Region 6
 Region 7
 Region 8

 Region 9

 Region 9 Alternate
 Region 10 (Alaska)

Other

Monica Rodia
 Ken Bailey
 Kevin Summers
 Lisa Smith
 Allison Martin
 Joel Scheraga*
 Fred Hauchman*

TSC Executive Secretary, OSP
 OSP
 ORD
 ORD
 OSP
 OP
 OSP

*Thursday, Dec. 8 attendance only