

Overcoming Barriers to Sustainable Waste Management in Tribal Communities

Prepared by: Waste Programs Sub-Workgroup Work Team 1



Before



After

A Report to the Federal Infrastructure Task Force
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Disclaimer

The research and recommendations described in this Report have been part of the Infrastructure Task Force Waste Programs Sub-Workgroup efforts to consider issues associated with tribal waste management needs. The views are solely those of individual members of the Work Team and do not represent those of the Infrastructure Task Force or of any federal agency participating in the Task Force. Transmittal of this report to the ITF does not signify that the contents reflect the views of the Infrastructure Task Force or of any federal agency participating in the Task Force, constitute an endorsement of its content or recommendation for use.

Executive Summary

Uncontrolled and unsafe waste disposal practices remain a critical human health and environmental issue for tribes.¹ Solid and hazardous wastes, especially when disposed of improperly, can cause many negative impacts to human health and the environment.² Traditional hunting, fishing, cultural and subsistence practices expose tribal communities to additional risks from bioaccumulation of toxins in plants and wildlife.

Effective and sustainable tribal waste management programs are essential to ensure the safe and proper disposal of waste in tribal communities. Although tribes tailor their waste management programs to meet the unique needs of their individual communities, there are some basic common components of any sustainable tribal waste management program. These components include financial viability, planning and management, staffing, appropriate waste management facilities and equipment, legally compliant operations, access to appropriate training and technical assistance, the ability to coordinate with other tribal governmental departments as well as the agencies of other jurisdictions, and effective tribal compliance assistance and enforcement mechanisms. These common components are not exclusive to solid waste management and are important for any community public works/utility management program.

At the 2002 World Summit on Sustainable Development, the United States agreed to support the United Nations Millennium Development Goals, including improving access to safe drinking water and basic sanitation. In 2007, a multi-agency tribal Infrastructure Task Force (ITF) was created to develop and coordinate federal activities for delivering water infrastructure, wastewater infrastructure and solid waste management services to tribal communities. In 2013, the ITF established a Waste Programs Sub-Workgroup (Waste Sub-Workgroup) to address issues associated with solid waste management needs in tribal communities. The Waste Sub-Workgroup, in turn, established three Work Teams to focus on different issues pertaining to addressing tribal waste management on tribal lands. Work Team 1, composed of tribal representatives along with federal and state agency personnel and technical assistance organizations (see Appendix C), was tasked to identify barriers to sustainable waste management for tribes and strategies to overcome those barriers. One way to do this is by determining what factors have been making solid waste management difficult for tribes and then developing strategies for improving waste management. This Report describes the results of those efforts.

This Report identifies barriers faced by tribes in their efforts to develop and implement sustainable waste management programs, minimize the generation of waste materials, achieve controlled and safe waste disposal practices, and clean up and close open dumps. This Report also provides a variety of strategies that could be implemented to overcome those barriers, and includes examples of *Strategies in Action* to assist in illustrating the potential effectiveness of the various strategies. Finally, this Report concludes with recommendations for the ITF to consider

¹ Definition of “tribe”: Any Indian Tribe, band, nation, or other organized group or community, including any Alaska Native village, which is recognized as eligible by the United States Department of the Interior for special services provided by the United States to Indians because of their status as Indians.

² Environmental Protection Agency. Evaluation Report: EPA Needs an Agency-Wide Plan to Provide Tribal Solid Waste Management Capacity Assistance (March 2011).

that will assist tribes with the development and implementation of sustainable tribal waste management programs.

Barriers

The Work Team has identified numerous barriers (described in more detail in Section VI and outlined in Appendix D of this Report) that prevent tribes from developing and implementing the necessary components of an effective and sustainable tribal waste management program. These include high costs and other challenges associated with the development and maintenance of an adequate waste collection and disposal infrastructure, particularly in remote areas, the absence of recycling programs and other waste diversion programs, and jurisdictional issues.

Cross-cutting issues facing sustainable tribal waste management programs include:

- Limited funds, both within the tribe and from the federal government and other sources, to address tribes' waste management needs. In addition, there are competing priorities within a tribe on how to use those funds.
- The need for enhanced coordination among tribes with federal, state and local governments, non-governmental organizations (NGOs), and private organizations, as appropriate.

Programmatic issues facing sustainable tribal waste management programs include:

- Limited awareness of available federal waste management-related resources and the need to keep existing reference resources updated.
- The need for enhanced tribal leader support and opportunities for community participation.
- The need to build the capacity to retain qualified staff.
- The need for better alignment of training and technical assistance between various agencies and technical assistance providers.
- Limited resources for implementation activities.
- The need to improve enforcement authority and capability.
- Limitations in multi-media federal funding.

Waste management facility-related issues facing sustainable tribal waste management programs include:

- The costs of rural waste management services.
- The need for support in building sustainable recycling and waste diversion programs.
- The need for improved management of construction/demolition waste.
- The need to ensure proper disposal of waste.

- The need for strategies to manage the impacts of extreme weather events.

Strategies

Numerous strategies have been identified by the Work Team that may assist with overcoming the sustainable waste management barriers that are discussed in this Report (described in more detail in Section VII and outlined in Appendix D). These include such things as:

- Encouraging investment in tribal waste management programs where funding is available.
- Focusing on opportunities for enhanced federal interagency coordination.
- Promoting the development of centralized systems for waste management and transport.
- Updating and maintaining a clearinghouse of available waste management resources.
- Strengthening ongoing tribal leader support and community outreach and education efforts.
- Accessing and aligning training and technical assistance activities to ensure there are consistent and comprehensive training programs that respond to tribal needs.

Recommendations

The information below provides the Work Team's recommendations for ITF's consideration. These proposed opportunities for collaboration between tribes, ITF and/or individual agencies would assist in the further development and implementation of effective and sustainable waste management programs in tribal communities for the protection of human health and the environment. The recommendations for consideration are not prioritized by importance.

- Continue the efforts of the ITF Waste Programs Sub-Workgroup in close coordination with tribal representatives for the purposes of addressing tribal waste management needs.
- Conduct a study, in partnership with tribes, to determine tribal sustainable waste management needs.
- Share the Strategies identified in Section VII of this Report with tribal communities to promote the many mechanisms that can be used when developing and implementing a sustainable waste management program.
- Assess available resources to identify overlaps and gaps. Maintain and update the Tribal Waste Management Funding Resources Directory and the Tribal Waste Management Technical Assistance Directory, as appropriate, to ensure that the information is kept up-to-date.
- Enhance comprehensive training and technical assistance programs by taking the following steps:
 - Continue interagency coordination under the ITF's oversight to identify topics that are currently being addressed as well as potential opportunities for increased efficiency.

- Receive tribal input regarding training needs and the most effective outreach approaches.
 - Develop a comprehensive set of trainings that allow for regionalization tailored to local tribal needs.
 - Enhance outreach to tribes regarding the available training.
 - Provide follow-up technical assistance, through circuit riders or other mechanisms, to tribal communities participating in training.
 - Expand upon existing federal agencies' peer matching and mentoring efforts to allow tribal communities to further capitalize on knowledge gained through the trainings.
- Use the ITF's Waste Programs Sub-Workgroup, Work Team 3's Report, *Proposed Approach to Improve Open Dumps Data and Solid Waste Projects and Programs in Indian Country*, to ensure that the IHS database accurately reflects the number and nature of open dumps on tribal lands and the costs of proper cleanup or closure as well as the costs of an alternative to open dumping for future solid waste disposal facilities.

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I. Introduction

Uncontrolled and unsafe waste disposal practices remain a critical human health and environmental issue for tribes. Solid and hazardous wastes, especially when disposed of improperly, can cause many negative impacts to human health and the environment. In particular, some common household items – such as paints, cleaners, chemicals, motor oil, batteries and pesticides – can be especially dangerous if not disposed of properly due to the hazardous ingredients in the products.

Tribal communities, with strong connections to their land through traditional hunting, fishing, cultural and subsistence practices, can face disproportionate adverse effects as a result of toxic releases to the environment. Toxics in the environment result in direct exposures for tribal communities, as people can come in contact with the wastes. Tribes' reliance on hunting and fishing for subsistence may result in additional exposures through bioaccumulation, as toxins are carried upward through the food chain, and through contact with disease-carrying animals attracted to waste disposal sites such as open dumps. Uncontrolled and unsafe waste management practices affect wildlife in several ways. For example, wildlife can ingest or be smothered by plastic packaging, be exposed to contaminated water runoff and landfill leachate, and ingest contaminated waste. In addition to affecting the health of tribal communities, these wildlife impacts also damage a vitally important cultural resource for tribal communities.

Human exposure to contaminants from solid waste occurs in many ways, including pollution of groundwater and surface waters contaminated with solid and liquid wastes, soil contamination from toxins in waste such as polychlorinated biphenyls (PCBs), and air contamination from airborne particulates. Open burning of waste contributes significantly to global anthropogenic emissions of small particulate matter as well as mercury and polycyclic aromatic hydrocarbon (PAH) emissions.

Human exposure to improperly managed wastes can cause lung and neurological diseases, and has been linked to heart attacks and some cancers. Heavy metals, dioxins, flame retardants, plastics and other pollutants cause a number of ailments and diseases. In particular, respiratory problems, neurological abnormalities, endocrine disruption, reproductive system disruption and developmental impairment have been shown to occur from exposure to improperly managed solid and hazardous waste materials.³



³ Environmental Protection Agency. Tribal Decision-Maker's Guide to Solid Waste Management (November 2003).

The issues facing tribal waste management programs are diverse and proper waste management remains a challenge for many tribes for a number of reasons. Some of the most significant factors contributing to unsafe waste disposal practices include high costs and other challenges associated with development and maintenance of adequate waste collection and disposal infrastructure, particularly in rural/remote areas, the absence of recycling programs and other waste diversion programs, and jurisdictional issues. These circumstances have led to the continued presence of open dumps in tribal communities. The situation has been exacerbated by the changing nature of materials that enter the waste stream and industry purchasing patterns, as well as by changing environmental conditions and extreme weather events.

Until these contributing factors are addressed, improperly managed waste will continue to pose significant threats to human health and the environment, adversely affecting tribal communities and future generations.



Transport of waste materials from tribal communities in remote areas can require chartered aircraft and other extremely expensive services.

II. Background

There are 573 federally recognized tribes in the United States. The tribes' cultures, languages and histories are diverse, and their population, size, land base, location and economic status vary greatly. Tribes also have many characteristics in common. Two of these characteristics are high poverty rates and locations in remote rural areas, which pose significant challenges for developing and implementing sustainable waste management programs on tribal lands.

According to the U.S. Census Bureau, about 26 percent of American Indian and Alaska Natives lived in poverty in 2016, the highest rate of any ethnic group. For the nation as a whole, the poverty rate was 14 percent.⁴ In 2016, the median household income of tribal households was more than 30 percent lower than the median household income for the nation as a whole.⁵ Contrary to the widely publicized financial success of some tribes that own gaming operations,

⁴ U.S. Census Bureau. American Fact Finder, 2011-2015 American Community Survey.

⁵ In 2016, \$39,719 was the median household income of single-race tribal households. This compares with \$57,617 for the nation as a whole. 2011-2015 American Community Survey.

most tribal governments continue to lack adequate independent sources of income from economic development or governmental revenues such as taxes and utility fees. In addition, there are many subsistence-based communities, primarily in Alaska, that do not fully participate in the cash economy. Also, most tribal communities remain relatively small and/or have a low population density, which results in a higher cost per household to build and maintain sanitation facilities. Many tribal communities do not have consistent tribal base funding and cannot afford to buy the supplies, fund the infrastructure, or pay the skilled workforce needed to manage environmental services.

As a result, high poverty rates and limited financial resources directly impact the tribes' ability to manage environmental services. The remote location of many tribes compounds these challenges. It takes more time and is more expensive to deliver supplies and equipment, infrastructure may be more vulnerable to changing environmental conditions and extreme weather events, and it can be difficult to attract qualified staff. These circumstances pose continuing challenges to providing the most basic sanitation services and infrastructure to tribal communities, including access to compliant and safe waste disposal sites and waste diversion programs.

At the end of calendar year 2017, the Indian Health Service (IHS) Sanitation Deficiency System identified a total need of approximately \$207.7 million for providing open dump cleanup and solid waste collection and disposal facilities and equipment to serve over 95,000 tribal homes.⁶ This figure does not include needs associated with recycling and other waste diversion programs and it also does not include funding to support tribal operations and maintenance activities.

The Indian Lands Open Dump Cleanup Act of 1994 reflects Congressional concerns that open dump sites on tribal lands threaten the health and safety of residents of those lands and contiguous areas.⁷ Congress tasks IHS to coordinate with the U.S. Environmental Protection Agency (EPA) to inventory and evaluate open dumps on tribal lands and to provide financial and technical assistance to address open dump cleanup and post-closure maintenance activities.⁸ IHS has provided about \$36.9 million in federal funding from appropriations for sanitation facilities construction for over 200 solid waste infrastructure and open dump mitigation projects since 1994.⁹

To develop a coordinated open dump cleanup program, IHS, EPA, the Bureau of Indian Affairs (BIA), the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Agriculture – Rural Development (USDA-RD), and the U.S. Department of Defense (DoD) formed the Tribal Solid Waste Interagency Workgroup in 1998 to implement the Tribal Solid Waste Management Assistance Project (TSWMAP). The TSWMAP funded a variety of solid waste projects from 1999 to 2011. Due to a shift in priorities among all of the federal agencies, the TSWMAP is no longer in existence.

Each federal agency continues to provide funding to support tribal waste management efforts (see Appendix B). However, ongoing budgetary constraints across the federal government and a need to prioritize funding for sanitation issues with the most immediate health impacts, such as safe

⁶ As IHS open dump data is updated, the cost information in the IHS Sanitation Deficiency System will need to be revised.

⁷ 25 USC § 3901(a).

⁸ 25 USC §§ 3904(a)(2), 3904(b).

⁹ 25 USC § 3907(b).

drinking water and wastewater disposal, have led to reduced availability of federal and tribal resources to address tribal waste-related issues despite the continued needs.



Uncontrolled and unsafe waste disposal practices, including open dumps, pose threats to public health and the environment in tribal communities.

III. Goals and Objectives of the ITF Waste Programs Sub-Workgroup and Work Team 1

The ITF comprises representatives from IHS, EPA, USDA-RD, BIA and HUD. In a Memorandum of Understanding (MOU) dated March 2013, the agencies reaffirmed their commitment to identify and address programs, initiatives and other activities to improve planning, construction, operation and maintenance of sustainable infrastructure in tribal communities. The MOU states that the intent is to “maintain a framework for all parties to enhance interagency coordination and to cultivate greater cooperation in carrying out their authorized federal government responsibilities.” The ITF Waste Programs Sub-Workgroup (Waste Sub-Workgroup) was established to implement the goals of the MOU as they pertain to sustainable solid waste management in tribal communities.

The Waste Sub-Workgroup comprises federal and state agency personnel, tribal representatives, and technical assistance organizations, and operates under a Charter that was finalized in August 2014. The Charter confirms the importance of collaborative efforts among member agencies to promote sustainable waste management programs for tribes. The Charter lists the following objectives:

- Collaborate on ways to leverage federal government resources to assist tribes in the management of waste.
- Encourage federal partners’ understanding of the authorities and limitations of each member agency.

- Provide outreach information and materials on waste management, including using the ITF website.
- Engage with tribes and other relevant stakeholders to promote sustainable waste management programs and sustainable solutions to address waste issues.
- Promote sustainability through the development and implementation of integrated waste management plans.
- Promote the federal partners' understanding of the scope and costs to close, clean up or upgrade open dumpsites on tribal lands throughout the United States. Develop the federal partners' understanding of waste and open dump/landfill deficiencies.
- Review the strategy currently used to identify and inventory open dumpsites on tribal lands and the protocols for assessing their health threat.

The Waste Sub-Workgroup established three work teams to accomplish the objectives identified in the Charter. Work Team 1 comprises tribal representatives, federal and state agency personnel, and technical assistance organizations. Work Team 1 was tasked with identifying barriers to the development and implementation of sustainable waste management programs on tribal lands as well as identifying strategies to address the barriers.

In this Report, the Work Team addresses this task and provides recommendations for the ITF's consideration. Among them, the Work Team recommends that the ITF confer with tribes regarding implementation of these potential recommendations and support ongoing collaboration among the federal agencies and tribes as they move forward with developing and implementing sustainable waste management programs on tribal lands.

IV. Methodology

Work Team 1 includes volunteers from tribal, federal, state and technical assistance organizations. Appendix C provides a complete list of the members of Work Team 1.

The Work Team first developed a work plan, then engaged in various aspects of the work. These efforts included:

- Developing and populating a Tribal Waste Management Funding Resources Directory that provides information regarding relevant federal funding programs.
- Developing and populating a Tribal Waste Management Technical Assistance Directory with relevant technical assistance information.
- Identifying elements to be included in this Report, including barriers to effective and sustainable tribal waste management programs as well as strategies for overcoming the identified barriers.
- Recommendations for the ITF's consideration.

The Work Team developed information and work products through regular discussions and review of a variety of written materials, including those identified in the References section of this

Report. Much of the information provided in this Report is based on the experiences, observations, knowledge and expertise of the representatives of tribal communities and consortia, federal and state agencies, and technical assistance providers who participated on the Work Team. The Work Team members also conducted outreach and received additional input through meetings of several Regional Tribal Operations Committees, the National Tribal Caucus, the Tribal Lands and Environment Forum, and other venues.

Decision-making regarding work products was done by consensus. Given the wide variety of circumstances and challenges faced by tribal communities across the country, the Work Team has decided not to formally prioritize the barriers and strategies presented in this Report.

V. Components of an Effective Waste Management Program

Given the wide variation in location, land base, population, governmental structure, culture and the nature of waste generated in different tribal communities across the United States, a “one-size-fits-all” approach to defining the elements of an effective tribal waste management program is not appropriate. Tribal waste management programs should be tailored to address the specific needs and circumstances of each community. Effective waste management in tribal communities requires appropriate collection, transport, disposal and waste diversion facilities. It also requires administrative, regulatory and community relation program elements such as:¹⁰



Tribal waste management laws and facilities help ensure a clean environment.

Financial Viability: an annual operating budget, user fees, adequate billing and collection procedures, and federal agency or other financial assistance, as needed.

Planning: an Integrated Waste Management Plan (IWMP), a Capital Improvements Plan, an Operation and Maintenance (O&M) Plan and a Business Plan.

¹⁰ Work Team 1 was tasked by the ITF’s Waste Programs Sub-Workgroup to identify core components that should be present to ensure the effectiveness and sustainability of a tribal waste management program. The components are based on EPA guidance documents as well as the personal observations and professional experiences of Work Team 1 members.

Management: a clearly defined and effective management structure, the ability to hire and direct staff, and a utility board with decision-making authority, if necessary.

Staffing: a staffing plan, a staff training plan, and the capacity to hire and maintain an adequate number of appropriately skilled staff.

Physical Facilities: the development and maintenance of such infrastructure as appropriate to address community needs and circumstances for waste collection, transport and disposal as well as waste diversion facilities such as recycling centers to minimize the amount of material that is entering the waste stream.

Equipment: the purchase, maintenance, repair and replacement of such items as may be needed to support program and facility operations.

Operations: compliance with applicable laws and regulations, and cost-effective operations that address municipal solid waste generation rates.

Training/Technical Assistance: the ability to provide staff with access to appropriate and ongoing training programs and technical assistance as necessary.

Coordination: the ability to effectively coordinate with other tribal governmental departments as well as federal, state and local agencies, and other organizations.

Compliance and Enforcement: the development and maintenance of effective laws and compliance-monitoring enforcement programs, including opportunities for public participation.

VI. Barriers to Effective Waste Management in Tribal Communities

Tribal communities face waste management challenges caused by the improper and unauthorized dumping of waste. The development and implementation of a sustainable waste management program is critical for tribal communities to ensure that waste is properly managed and to protect human health and the environment. The proper management of waste remains a challenge for many tribes due to various barriers, including limited resources, geographic location and environmental factors.

Building and implementing a sustainable waste management program involves many critical components such as the development and implementation of integrated waste management plans, waste codes/ordinances, complex jurisdictional boundary management issues and behavioral changes in the community. In addition, federal agencies play an important role in providing resources and technical assistance in working with tribes to create and implement sustainable waste management programs.

It is critical to understand the variety of barriers faced by tribal communities in their efforts to establish and maintain effective and sustainable waste management programs. This understanding

will enable the identification of appropriate strategies to address the barriers with the goal of protecting the health of tribal communities and future generations.

The following is a non-exclusive list and discussion of various barriers that prevent tribes from effectively managing waste in their communities. The barriers and strategies have not been prioritized due to the wide variety of circumstances and challenges faced by tribal communities across the country. For ease of reference only, the barriers are organized under three categories: (1) cross-cutting issues, (2) programmatic issues and (3) physical facilities. The barriers, along with possible strategies to overcome them are summarized in Appendix D.

A. Cross-Cutting Issues

1. **Funding.** One fundamental prerequisite to an effective and sustainable tribal waste management program is adequate funding to cover the costs associated with all essential program components. These components include payroll, staff training, contractors, facilities development, operations and maintenance, as well as equipment purchase, repair, maintenance and replacement. Within a tribe there are competing priorities, and, in some cases, tribes have expressed that they lack the internal funds needed to cover such costs, for the reasons described in the Background section of this Report. The pervasive lack of independent sources of funding, such as revenue from economic development or income from taxes or other governmental assessments, prevents tribal governments from being able to fund many necessary programs, and the high rate of poverty among tribal community members impedes the collection of adequate fees to cover these costs. This situation is even more challenging in subsistence-based communities that do not fully participate in the cash economy. As a result, many tribes rely on state, local and federal grants and other outside sources of financial support to fund portions of their waste management needs.

In addition to inadequate tribal funding, there are competing priorities for the federal funds that are available to address all tribal waste management needs. This is due to a variety of factors, including limited flexibility of federal funds. While some federal agency programs have flexibility, some components, such as a variety of operation-and-maintenance (O&M) related tasks cannot be funded by federal agencies due to a lack of statutory authority. This results in a situation where, though tribes may be eligible for funds for construction, they lack access to funds for operation and maintenance.

2. **Interagency Coordination.** Coordination among the federal agencies in the planning and delivery of training and technical assistance is essential to ensuring effective and sustainable waste management in tribal communities. Given the reliance of many tribal communities on federal support, the federal government's trust responsibility to tribes, the statutory authority and duties of various federal agencies, the common interest in protecting human health and the environment, and a robust federal role in addressing federal funding, increased efficiency in these federal efforts is critical. Moreover, it is essential to accomplish this work in direct partnership with tribes, state and local governments, NGOs, and private organizations, as appropriate.

Several federal agencies provide or fund waste-related trainings. They should build upon their current efforts to coordinate training to ensure efficiency and consistent messages.

B. Programmatic Issues

1. Limited awareness of available federal waste management-related resources and the need to keep existing resource references updated. Tribes seeking federal funding and technical or other assistance often have difficulty finding appropriate sources in existing databases such as Grants.gov or the Assistance Listing (formally known as the Catalog of Federal Domestic Assistance, or CFDA).¹¹ To respond to this need, the Work Team developed the Tribal Waste Management Funding Resources Directory and the Tribal Waste Management Technical Assistance Directory.¹² These directories, while currently up-to-date, will need to be maintained to ensure that tribes have access to the most accurate and updated information available.
2. Tribal leader support/community participation. Effective tribal waste management programs require the support of tribal governments for funding, approval of laws, plans and programs, and the participation of community members to ensure that the laws, plans and programs are implemented properly. This can be difficult to achieve given the frequent changes in tribal leadership as well as the changing makeup of the community population over time. Tribal councils and elected officials also face many competing priorities.

One way to address these issues is through ongoing community outreach and education, such as presentations, workshops, newsletters and regular community events, including special collection events and Earth Day programs and/or events. Educational materials need to reflect the different ages of the audience as well as interests. Educating youth about these topics is a priority for many tribes. These types of activities assist tribal government leadership and community members with a better understanding of the public health and environmental consequences of improper waste management and encourage their support and participation in essential program components. In turn, increased participation will strengthen the long-term sustainability and effectiveness of waste management programs.

Some tribal communities may not be able to fund and implement these types of activities without financial and/or technical assistance. Most federal agencies include education and outreach activities as components of their grant programs. In addition, the Tribal Waste Management Technical Assistance Directory includes non-federal organizations that provide this assistance.

3. Capacity to retain qualified staff. A successful waste management program requires adequate staffing to undertake the administrative, regulatory and community relations components of the program, as well as to properly operate and maintain the community's waste collection, transport, disposal and diversion facilities. Many tribal communities have difficulty attracting and keeping qualified staff because they are limited in the salaries they are able to offer and may not be able to cover the costs of needed trainings on an ongoing basis in part due to their remote location. A tribe without adequate independent sources of funding can use GAP funds to cover staff salaries and training activities related to capacity development. In addition, the FY 2018 Enacted Appropriations authorizes GAP to cover tribal waste collection programs,

¹¹ As of May 25, 2018, official CFDA information is available online at <https://beta.sam.gov>.

¹² Available online at <https://www.epa.gov/tribal-lands/tribal-waste-management-funding-resources-directory> and <https://www.epa.gov/tribal-lands/tribal-waste-management-technical-assistance-directory>.

backhaul/transportation of materials, and landfill disposal/operations and maintenance expenses on a permanent basis. Nevertheless, GAP funds have a variety of competing administrative and programmatic capacity building uses. This may result in a shortfall of resources to prioritize tribes' access to and retention of qualified staff.

4. [Alignment of training and technical assistance activities to ensure consistent and comprehensive training programs](#). Various federal agencies, state agencies, technical assistance providers and tribal consortia offer a wide range of trainings that may be useful to tribes (see the [Tribal Waste Management Technical Assistance Resources Directory](#)). However, because these efforts are not currently centralized or coordinated, there may be overlap in certain subject matter areas, voids in training opportunities, and inconsistencies. Federal agencies are aware that training efforts need to be aligned. Consequently, the ITF is working to more effectively and collaboratively coordinate on the training that is offered to tribes. In addition, the newly developed Tribal Waste Management Technical Assistance Directory will assist tribes with finding training opportunities that are available.
5. [Resources for implementation activities](#). Implementation of the full range of waste management program elements, including delivery of services, is essential to ensuring a program's effectiveness. This applies to components such as enforcement (e.g., developing and updating laws, monitoring and investigating violations, and prosecuting offenders), as well as properly operating and maintaining waste transport, collection, disposal and diversion facilities. If a tribal government does not have the capacity and funding to implement a waste management program, it cannot undertake essential governmental functions such as proper waste disposal, collection and/or backhaul. While current solid waste federal funding programs cover some solid waste implementation activities, they generally do not pay for these types of activities (waste transport, collection, disposal and diversion). However, these activities can be funded through EPA's GAP program.

Combined with a deficit of operations and maintenance funding, tribes have stated that the lack of a long-term commitment to subsidizing these services may have a negative impact on tribal communities. Other federal solid/hazardous waste funding opportunities are competitive, not a source of reliable funding, and often carry similar restrictions on operations and maintenance expenses. IHS and other organizations (such as some non-profit organizations) do provide technical assistance related to operation and maintenance of solid waste infrastructure, but they do not provide funding for operation and maintenance activities.



Program effectiveness requires successful implementation of multiple waste management program elements.

6. [Enforcement authority and capability](#). As mentioned above, the efforts of tribal communities to properly manage waste can be hampered by challenges in developing and implementing effective enforcement mechanisms. Tribal governments have limited jurisdictional authority over non-members and in many cases lack the mechanisms necessary to monitor, investigate, cite and prosecute those who improperly store, transport or dispose of waste on their lands. In particular, this is the case with “midnight dumpers,” but also applies to community members. The Resource Conservation and Recovery Act (RCRA) is primarily implemented by states pursuant to a rulemaking process whereby EPA delegates the primary responsibility of implementing the RCRA hazardous waste program to individual states in lieu of EPA. States also implement the solid waste program pursuant to regulations. However, state regulation of waste generally does not apply to tribal communities.¹³ In addition, EPA has limited statutory authority to enforce RCRA provisions or take action against parties engaged in improper handling or disposal of non-hazardous waste. In these circumstances, the lack of effective tribal enforcement programs may create a regulatory void in tribal communities, impeding the implementation of safe and effective waste management practices.

C. Waste Management Facilities

1. [Costs for rural waste management services](#). The development and maintenance of adequate waste collection and disposal mechanisms is a significant challenge. Many, if not most, tribal communities are located in rural areas where municipal services are not available or may be extremely expensive. This is attributed to long distances to appropriate facilities and the corresponding elevated waste material transport costs. Many rural tribal communities have small populations, which make waste services more expensive per person. Also, some communities lack independent sources of income to cover the costs to provide such services themselves, especially those in impoverished and isolated locations with economies that are only partially cash based. Among those that have imposed fees on community members for

¹³ There are some exceptions, such as in Alaska. The State of Alaska is the primary solid waste regulator in Alaska, through an EPA-approved, rather than delegated, program, which does not include all RCRA requirements. For example, Class III landfills are unlined due to permafrost.

waste management activities, there is a wide variation in the amount that is charged, the extent of actual program costs covered by the fees, and the ability to collect them from tribal members. Alaska tribes are faced with additional waste management challenges due to their inaccessibility (the majority are off road systems), extreme weather patterns, and unique jurisdictional and regulatory context (see Appendix E).

As previously stated, some federal funding resources are restricted from supporting operations and maintenance costs, such as collection/pickup, recyclables backhauling/transportation and landfill/recycling center staff salaries. Tribal communities may, therefore, lack the resources necessary to develop and operate the infrastructure needed to properly manage waste.

High Waste Disposal Costs Facing Tribes in Remote Locations: Chalkyitsik Village, Alaska

In July 2016, the Village's environmental coordinator arranged for an air carrier to backhaul 4,870 pounds (2.43 tons) of recyclable materials from this remote community in northeast Alaska. The materials included freezers, televisions, snow machines, empty propane bottles, transformers and an engine. Propane bottles and engines are considered hazardous for air transport and required special processing and packaging by the tribe, which increased the price of removing these materials from the village. The total cost to Chalkyitsik's IGAP program was \$9,592.50.

In contrast, as of 2017, the average price nationwide to dispose of a ton of solid waste is \$50.60. Assuming an additional surcharge of \$30/ton for a mixed load, the average cost to dispose of a load similar to the one in Chalkyitsik Village would be \$195.86 (a cost reduction of 98 percent) in more populated areas.

2. [Support in building sustainable recycling and other waste diversion programs.](#) Recycling and other waste diversion programs can be effective ways to minimize the quantity of materials disposed into landfills or improperly disposed because of the high cost or difficulty associated with proper handling. Many tribal communities, especially those located in remote or rural areas, lack the economic means to benefit from waste diversion activities such as recycling. The economies of Alaska tribal communities, for example, are mainly subsistence based rather than cash based, and many are not associated with a town or city government. Some of these communities cannot provide the types of materials and marketable items that are in demand for recycling and that have a high value, such as copper and steel. This can pose a major deterrent to efforts to establish and maintain a recycling program.

In addition, the costs to transport recyclable material to an appropriate facility are often prohibitive, in that they cannot be covered by the minimal revenue generated by the program. For example, transportation of materials from off-road Alaska communities must be done by aircraft or by barge, which is logistically difficult and expensive due to remote locations and limits posed by weather conditions. As a result, many tribal communities cannot feasibly operate a recycling or other waste diversion program without the support of funding from external sources. However, such funding is often conditioned on a

demonstration that the program will be financially self-sustaining.

3. [Management of construction/demolition waste](#). The improved management of construction/demolition waste includes activities that are associated with the construction of new homes, community buildings and other structures, and the demolition of aging or uninhabitable structures that generate large quantities of waste material, including metal, glass, wood, bricks, rubble, dry wall, roofing materials, tiles, insulation, plastic, Styrofoam, concrete and hazardous materials. Particularly in rural or remote areas where communities may appear to be unregulated, or at least unmonitored, and from where transportation of waste materials for proper disposal may be quite costly, contractors may leave much of this type of debris on site, posing threats to human health and the environment. In communities with landfill facilities, large volumes of construction/demolition waste may reduce landfill capacity.

The Native Village of Tanana, Alaska, has faced several challenges related to construction/demolition waste, with varying outcomes. An IHS demolition project in 2010 provided funds so that the Village could pay landfill tipping fees to the City of Tanana for the material, with the landfill upgraded to ADEC standards. However, a recent state-funded water and sewer project resulted in contractors leaving behind piles of debris in the community. Similarly, a demolition project by the U.S. Air Force at the nearby Bear Creek Radio Relay Station Base as part of its Clean Sweep program left behind partially-buried drums and fuel. The tribe later cleaned up the material using its own resources.

4. [Proper disposal of waste](#). A variety of circumstances may encourage the uncontrolled disposal of waste in tribal communities. A tribe may not be able to provide proper collection or disposal facilities for its members. Even where such facilities exist, community members may not understand the human health and environmental impacts of improper disposal and may choose not to use the facilities; or they may not be able to afford the costs of participating in a collection program if it is offered for a fee. Tribal members may also believe that established collection points may be too far from their homes, or are inconveniently located for easy transport, or may be occasionally inaccessible during bad weather. Also, in rural/remote areas, a perception that tribal lands are unmonitored and/or unregulated may encourage outsiders to use these lands as dumping grounds for a variety of wastes, from municipal trash to abandoned appliances and automobile.

Perhaps the most effective way to minimize the risks of uncontrolled waste disposal in tribal communities is to ensure tribal waste management programs are able to offer full waste collection/transport/disposal services at affordable rates, to engage in appropriate outreach and education activities, to encourage the support of leadership and the participation of community members, and to effectively monitor and regulate waste disposal within tribal communities' jurisdiction. The barriers to achieving this level of tribal waste program development also present a barrier to preventing open dumping in tribal communities.

Once open dumping has occurred in a tribal community, human health and environmental risks will continue to persist until the dump is properly cleaned up and closed. As described elsewhere in this Report, funding to address this need is an ongoing challenge. Tribes have expressed concern that EPA's Strategic Plan no longer contains a performance measure targeted to open dump cleanups. EPA's main tribal waste management priority is assisting

tribes with developing and implementing sustainable waste management programs on tribal lands. While cleanup and closure of open dumps are eligible activities under GAP, they require EPA approval and there are many competing uses of GAP funding in every tribal community. IHS funding is similarly subject to competing uses, and prioritized more highly for drinking water and wastewater disposal projects in accordance with statutory requirements of P.L. 94-437 (25 U.S.C. 1632), which places solid waste deficiencies at a lower priority level than a lack of a safe water supply or a sewage disposal system.

There is an ongoing need to quantify the cost of addressing open dump cleanups and IHS continues to engage in this effort through analysis of the project costs associated with open dump projects in the Sanitation Deficiency System (SDS) portion of the IHS Sanitation Tracking and Reporting System (STARS). However, Work Team 3's May 2016 Infrastructure Task Force working paper – "Proposed Approach to Improve Open Dumps Data and Solid Waste Projects and Programs in Indian Country" stated that there is a need to review open dump data in the STARS database to ensure it is accurate and sufficient.

To accomplish this goal, IHS and EPA established an MOU to address issues of mutual concern. The first focus area of the MOU is that IHS commits to continued review and updating of the open dump inventory data. Addressing this important issue will help to improve the quality of nationwide open dump data and will lead to better cost data for open dump cleanup needs. There are currently about \$164 million in open dump clean-up projects in SDS, but not all open dumps yet have a corresponding SDS project, so this value may increase as data quality improvement efforts continue. In addition, ongoing IHS review of the cost data for projects in the SDS system will improve cost estimates for the open dump cleanup projects included in the STARS database.



Accurate and up-to-date information on open dumps nationwide is vital to addressing uncontrolled disposal of waste in tribal communities and ensuring the effectiveness of open dump cleanups.

5. [Impacts of extreme weather patterns](#). Increased storm surges, rising sea and river levels, and accelerating coastal and inland waterway erosion, as well as drier winters and summers that increase the length and severity of the wildfire season impact tribal communities. When coastal shorelines and interior river banks erode, both permitted landfills and unpermitted dump sites have the potential to fall into waterways, releasing unknown pollutants. Wildfires may threaten to burn waste disposal sites, resulting in deposition of contaminants into the atmosphere. Open burning of waste, a common occurrence in tribal communities, may itself trigger a fire that spreads into adjacent lands. Both erosion and fires may also impact roadways that are used to transport waste out of communities for proper disposal.

In addition, natural disasters from powerful storms may generate large amounts of debris that will be need to appropriately managed. Disaster debris often includes building materials, brush and trees, animal carcasses, sediments, vehicles and electronic waste. Large quantities of debris can make recovery efforts difficult by, for example, hindering emergency personnel, damaging or blocking access to necessary infrastructure, and posing threats to human health and the environment. Cleaning up this debris can be time-consuming, difficult to manage and costly, extending the recovery from the disaster.

Extreme weather patterns pose risks to permitted landfills and unpermitted dump sites, with erosion leading to releases of unknown pollutants.



VII. Potential Strategies to Address Each of the Identified Barriers

Below, the Work Team identifies various strategies that tribal communities, other governmental agencies and the ITF could use to overcome barriers to effective and sustainable tribal waste management programs. The strategies described below can be implemented in partnership with other parties or by an individual tribe or government agency. The summary is bulleted and contains brief descriptions for ease of reference. The strategies are not prioritized because circumstances and needs in tribal communities vary considerably and government agencies have varied priorities.

A. Cross-Cutting Issues

1. Funding:

- Conduct outreach/education to tribal leadership regarding human health and environmental impacts from improperly disposed waste, encouraging investment in tribal waste programs where funding is available.
- Prepare feasibility studies and plans to explore waste-related businesses that might defray costs.
- Modify requirements of funding programs to allow tribes to direct federal funds to where they are most needed, as allowed under the specific statutory authority. An example of this strategy is evidenced in the “Consolidated Appropriations Act, 2018” which provides language that clarifies and affirms that Indian Environmental General Assistance Program (GAP) funding is available to federally recognized tribes for solid waste and recovered materials collection, transportation, backhaul, and disposal services.

- Develop tribal fee structures for waste collection and diversion programs.
- Initiate a dialogue with federal agencies to discuss eligibility requirements for multi-media grant programs.

2. Enhanced federal interagency coordination:

- Clearly define the roles and responsibilities of each agency that has authorities and programs that address tribal waste-related needs.
- Use the ITF as a mechanism to coordinate multiple efforts to address those needs on an ongoing basis. (*Note:* the specific recommendations for the ITF’s consideration are listed in Section VIII of this Report.)
- Maintain continued interagency efforts to work in close collaboration with tribes.

3. Development of centralized systems for waste management and transport:

- Develop “best practice” models of hub-and-spoke systems,¹⁴ customized to promote efficiency and to fit geographic, regional, and statewide circumstances.¹⁵
- Address issues, including financing, infrastructure, staffing, coordination, logistics, training, supplies, equipment and technical assistance, associated with the development of hub-and-spoke systems.

B. Programmatic Issues

1. Limited awareness of available federal waste management-related resources and the need to keep existing resource references updated:

- Identify up-to date potential sources of financial support, including for circuit riders. Financial resources will be updated and maintained through the Tribal Waste Management Funding Resources Directory. The Work Team developed the Directory and populated it with current information regarding funding and technical assistance that is available from over 20 federal agencies identified as having resources that can address tribal community waste-related needs.¹⁶
- Update and maintain the Tribal Waste Management Technical Assistance Directory. The Work Team developed the Directory to provide tribal communities with a centralized source for waste-related technical assistance resources and information.¹⁷
- Encourage federal agencies, technical assistance providers and tribes to provide support

¹⁴ In a hub-and-spoke system, communities (or “spokes”) can connect their potentially hazardous and recyclable waste streams to a final destination for disposal or recycling via a regional “hub.” Waste from the spoke communities is transported to a hub community. The hub then organizes and implements consolidated or individual shipments to final destinations for all potentially hazardous and recyclable wastes. These systems help transporters, recyclers and buyers obtain the necessary scale and quality of materials required.

¹⁵ An example of a centralized statewide transport system currently in the pilot project stage of development is the Backhaul Alaska Program (see Appendix E. Solid Waste Management Challenges in Alaska).

¹⁶ <https://www.epa.gov/tribal-lands/tribal-waste-management-funding-resources-directory>.

¹⁷ <https://www.epa.gov/tribal-lands/tribal-waste-management-technical-assistance-directory>.

for information resource-sharing on waste-related topics.

- Provide input to Grants.gov to make services more user friendly.
- Offer trainings and/or “how-to guides” on the effective use of the Tribal Waste Management Funding Resources Directory, the Tribal Waste Management Technical Assistance Directory and the Grants.gov databases.
- Encourage the use of Regional Tribal Operations Committees (RTOCs) as an information-sharing vehicle among tribes and/or between tribes and federal agencies.

2. Tribal leader support/community participation:

- Ensure ongoing education/outreach/community event programming tailored to community needs and culture for maximum effect.
- Implement the ITF Waste Work Team 2 *Community Engagement Strategy: Issues to Consider When Planning and Designing Community Engagement Approaches for Tribal Integrated Waste Management Programs*.¹⁸
- Enable circuit riders to assist with educational activities.

Community Education and Outreach Events Change Behaviors in the Village of Tetlin

Observing that youth often dump their families’ garbage at the landfill, environmental staff have provided education events on landfill safety and proper disposal at the Village’s school. The Tribe also hosts cultural, environmental and wellness summer camps, and distributes an environmental newsletter filled with information about environmental and public health issues and relevant community events. Newsletter distribution has grown from occasional hand-delivery to monthly mailings to all residents. Through these efforts, youth are learning the importance of proper handling and disposal of waste in the Village’s new landfill.

3. Capacity to retain qualified staff:

- Use tribal government-provided funding from sources such as waste-related businesses where feasible.
- Consistent with statutory authority, ensure maximum flexibility in the use of federal funding to cover tribal waste utility program operation and maintenance activities.
- Ensure staff access to waste management-related trainings through the development of a comprehensive federal training program. In addition, consistent with statutory authority, ensure maximum flexibility in the use of funding to cover travel and other associated costs. A federal training program may be beneficial for nationwide uniformity and

¹⁸ *Community Engagement Strategy – Issues to Consider When Planning and Designing Community Engagement Approaches for Tribal Integrated Waste Management Programs*: <https://www.epa.gov/sites/production/files/2017-03/documents/tribalswcommunityengagementstrategy508.pdf>.

consistency, but localized trainings are also needed (e.g., the Backhaul Alaska Program).

4. [Access to and alignment of training and technical assistance activities to ensure consistent and comprehensive training programs:](#)

- Continue interagency coordination under the ITF’s oversight to identify what is currently being addressed, and where there may be opportunities for increased efficiency.
- Receive tribal input regarding training needs and effective tribal outreach approaches.
- Develop a comprehensive set of trainings that allow for regionalization tailored to local tribal needs.
- Identify mechanisms to provide information to tribes regarding available trainings.
- Provide follow-up technical assistance, through circuit riders or other resources, to tribal communities participating in trainings.
- Expand upon existing federal agencies’ peer matching and mentoring efforts to allow tribal communities to further capitalize on knowledge gained through the trainings.
- Provide open dump assessment training regarding the reporting and updating of information in IHS databases.¹⁹
- Identify other technical assistance opportunities to address tribal needs.

Keweenaw Bay Indian Community Pilots Peer Match to Assist with Transfer Station Development

To address improper waste management, lack of solid waste service and the absence of waste reduction methods, the Keweenaw Bay Indian Community piloted a peer-match program facilitated and funded by EPA to assist with its development of a transfer station. The community was able to obtain productive, cost-effective, culturally-relevant technical assistance from the neighboring Bad River and Fond du Lac Band of Lake Superior Chippewa regarding facility specifications and design review, budget projections, staffing needs, and materials recovery/recycling opportunities.

5. [Resources for implementation activities:](#)

- Consistent with statutory authority, ensure maximum flexibility in the use of funding to provide ongoing support for waste management activities.
- Encourage tribes to develop MOUs with local governments, non-profits and local regional businesses to support tribal implementation efforts.

¹⁹ IHS and EPA will provide this training under the terms of an MOU signed in 2017.

Akiak Native Community MOUs with City Facilitate Waste Management Improvements

After developing a recycling program to reduce the amount of trash going to its landfill, the Akiak Native Community entered into MOUs with the City of Akiak to collaborate on landfill management, resulting in a solid waste management plan and landfill improvements. Supported by GAP funding, the community has been able to collect old drums, computers, ballasts, fire extinguishers and other items and ship them out for proper disposal. They have also inventoried, organized and prepared abandoned vehicles for backhaul.

6. Enforcement authority and capability:

- Develop MOUs with local governments to address jurisdictional gaps, and coordinate efforts to address waste-related issues within tribal communities.
- Consistent with statutory authority, ensure maximum flexibility in the use of federal funding to provide ongoing support to tribal enforcement programs.
- Support tribal codes and ordinances training from various sources and organizations.
- Provide access to the Native American Rights Fund (NARF) library of waste-related ordinances. (*Note: this is also referenced in the Tools tab of the Tribal Waste Management Technical Assistance Directory.*)

Kwigillingok Environmental Code Changes Behaviors to Keep the Community Clean

In 2013, the Village of Kwigillingok took steps to preserve land for future generations by developing an enforceable environmental code to define proper waste disposal. Education and outreach raised awareness among contractors and the community, and resulted in majority support for the new code. The code has encouraged contractors to ship their debris and excess supplies and equipment out of the Village instead of leaving it behind. It also prevents community members from dumping their trash on the riverbanks and from dumping honey bucket waste in unmaintained pits.

On-Site Mentoring Assists Havasupai Tribe in Developing a Composting Program

The Havasupai Tribe is located eight miles into the Grand Canyon, where waste management is a complicated and expensive challenge because all waste must be hauled out by helicopter or on horseback. Since a significant part of its waste stream is composed of food waste, the Tribe has been interested in developing a comprehensive composting program. Under its USDA-funded on-site mentoring program, ITEP was able to arrange for the Tribe's solid waste manager to tour composting sites, and send a composting expert to the community to meet with residents and solid waste professionals, conduct workshops, and assist the Tribe with development of a composting plan.

C. Waste Management Facilities

1. Costs for rural waste management services:

- Develop data/information on tribal waste program needs.
- Use the [Tribal Waste Management Program Sustainability Evaluation Tool](#) to evaluate how tribal waste management programs are currently operating and to identify specific areas where additional support is needed in developing sustainable tribal waste management programs.
- Consistent with statutory authority, ensure maximum flexibility in the use of existing funding to ensure that high-priority tribal needs can be addressed.
- Reduce the costs of hazardous waste and hazardous materials transportation to end destinations through a centrally coordinated and streamlined waste backhaul service. For example, the Backhaul Alaska Program is being piloted in 35 communities in FYs 2018 to 2020 and will be expanded to additional communities throughout Alaska each subsequent year.
- Cluster communities in “wastesheds” to collaborate on infrastructure needs and streamline costs.
- Use the control tower/hub-and-spoke model – develop uniform regional and statewide guidance, processes and procedures to coordinate regular collection, transport and disposal services, and special collection events.
- Develop an electronically accessible document that contains information on new and used solid waste management equipment that is available for purchase or lease (e.g., available from governments and private businesses) on a statewide or regional basis.

Peoria Tribe Hosts Convenience Centers for Regional Waste Collection

After cleaning up several open dump sites on tribal property, the Peoria Tribe of Oklahoma determined that collection centers would be useful to minimize future illegal trash dumping. The Tribe partnered with Ottawa County, the Oklahoma Department of Environmental Quality, EPA and IHS to develop multiple Solid Waste Convenience Centers, two of which opened earlier this year. The Centers, which are open to county and tribal residents, are located on tribal land leased to the County at no cost and will be managed by the Tribe for 18 months before being turned over to the County. A reduction in roadside waste has already been observed since the centers opened.

2. Support in building sustainable recycling and other waste diversion programs:

- Develop data/information on tribal sustainable materials management program needs.
- Develop feasibility studies and plans for waste-related businesses.
- Incentivize volunteer community participation in waste diversion programs.
- Facilitate tribal community participation in hub-and-spoke model recycling programs.

Chalkyitsik Recycling Program

After learning about the harmful health impacts from hazardous wastes, Chalkyitsik Village prioritized the creation of a recycling program. The Village started small in 2012, recycling bottles, cans, small appliances and electronic wastes. Since then, the Village has expanded its efforts, recycling thousands of pounds of white goods (i.e., large appliances such as dishwashers and freezers) and shipping totes full of hazardous lead acid batteries, electronic wastes (e.g., computers and televisions), fluorescent light bulbs, abandoned vehicles and other items. Like many rural Alaska communities, Chalkyitsik is not on the road system, so transporting recyclables out of the village can be challenging and requires ingenuity. When the Village's housing program charters a plane to deliver building materials, they send some of the recyclables out on the return flight, demonstrating one way to address this challenge. Chalkyitsik Village completed construction of a new recycling center in late 2015.

Hub-and-Spoke Recycling in New Mexico

The Pueblos of Cochiti, San Felipe and Santo Domingo are working closely with the New Mexico Recycling Coalition, a non-profit recycling advocacy group, to design a more efficient recycling system based on partnering with each other. One pueblo will serve as the hub while neighboring “spoke” pueblos will transport collected materials the short distance to the hub. With the increase in material volume, the hub can justify transportation and investment in recycling processing equipment. The spokes can greatly reduce their costs and still offer recycling programs to their members. This is one of the first examples of a successful tribal community hub-and-spoke recycling model.

3. Management of construction/demolition waste:

- Add cleanup and proper disposal requirements to construction contracts and tribal laws and include example language/tribal laws in the Tribal Waste Management Technical Assistance Directory.
- Disseminate laws or information from other jurisdictions.
- Circulate EPA bid specifications for demolition associated with brownfields, including cleanup responsibilities.²⁰
- All federal departments and agencies, including self-governance tribes and their contractors, should properly manage all waste produced by federally conducted and supported activities/projects on tribal lands and should ensure that Federal Acquisition Regulation (FAR) clauses related to cleaning up construction sites (FAR 36.512 and 52.236-12) are included in all federal contracts, grants and/or cooperative agreements. The clauses should ensure that waste that is generated is properly managed (repurposed, recycled, reused) or disposed of in a compliant disposal facility.

²⁰ <https://www.epa.gov/large-scale-residential-demolition/road-reuse-residential-demolition-bid-specification-development>.

Alaska Department of Environmental Conservation (ADEC) Informs Construction/Demolition Contractors of Proper Waste Disposal Requirements

Recognizing the challenges associated with disposal of construction/demolition waste in rural Alaska, and the potential for such waste to be improperly disposed of, ADEC has developed a letter that it provides to all contractors describing proper waste disposal requirements. It reminds contractors that local landfills may not be permitted, accept construction/demolition waste or have space available to accommodate large volumes of project waste; describes other options for disposal; explains the required handling of hazardous materials associated with demolition; and notifies contractors that they may be subject to enforcement action for improper disposal or abandonment of construction/demolition waste. Finally, it encourages contractors to assist rural Alaska communities, including Alaska Native Villages, in their efforts to ensure safe and environmentally sound disposal practices.

4. Proper disposal of waste:

- Enhance interagency coordination and leverage federal resources in close coordination with tribal partners to develop sustainable waste management programs.
- Ensure that IHS databases are current and accurate, and that the data includes cost estimates for open dump cleanup or closure funding.
- Support tribal community outreach/education/cleanup events to minimize open dumping by encouraging voluntary participation in waste management programs, including proper waste disposal and waste diversion.
- Promote tribal compliance and enforcement programs to deter improper waste disposal by community members and outsiders.
- Provide support to tribal waste diversion programs in order to assist with minimizing the improper disposal of waste.
- Facilitate manufacturer take-back of large waste items, such as old appliances and e-waste, to minimize the risk of such items being disposed of improperly. Manufacturer take-back programs are the result of voluntary efforts by manufacturers and state laws; both approaches can be encouraged.
- Incorporate waste minimization as a strategy for controlling waste collection, transportation, disposal and recovered materials reprocessing costs.

5. Impacts of extreme weather patterns:

- Engage in adaptation planning.
- Formulate a plan to properly manage disaster debris.²¹

²¹ <https://www.epa.gov/large-scale-residential-demolition/disaster-debris-planning>.

Makah Tribe Opens Transfer Station to Facilitate Cleanup and Closure of Long-Used Seaside Open Dump

For decades, an open dump at Warmhouse Beach, which overlooks the Strait of Juan de Fuca and the Pacific Ocean, was used by the U.S. Air Force to dispose of solid and hazardous waste, and has served as the only solid waste disposal site for Makah Reservation residents. Closing and cleaning up the Warmhouse Beach Dump has been a high priority of the Makah Tribe, but required an alternative disposal option to be implemented. To achieve its goals, the tribe spent years pursuing waste characterization of the open dump, and exploring design alternatives for a new transfer station and funding sources. EPA and IHS provided the funding for planning activities, and the design and construction of the new facility was funded by USDA-RD. The new transfer station incorporates many state-of-the-art, environmentally sensitive components, including rainwater harvesting, natural stormwater controls, a separate station for household hazardous waste, diversion of reusable materials, recyclables, major appliances and abandoned vehicles, compacting to minimize the space needed for disposal of traditional wastes, and energy conservation features.

VIII. Recommendations for ITF Consideration

The *ITF Solid Waste Program Sub-Workgroup Action Plan* and *Work Team 1 Work Plan* charged the Work Team with identifying “gaps in coverage that may require further attention” as well as “examine how federal agencies and/or other “outside groups” can effectively work with these tribes to achieve sustainable implementation of a solid waste management program.” The table below proposes opportunities for collaboration between tribes, ITF and/or individual agencies to reach this goal. The Work Team would be very interested in a response from the ITF on which recommendations, if any, could be explored for future implementation. The Work Team has not prioritized “by importance” the recommendations that are outlined below.

RECOMMENDATIONS
Continue the efforts of the ITF Waste Programs Sub-Workgroup in close coordination with tribal representatives for the purposes of addressing tribal solid waste needs.
Conduct a study, in partnership with tribes, to determine tribal sustainable waste management needs.
Assess available resources to identify overlaps and gaps.
Share the strategies identified in Section VII of the Report with tribal communities to promote the various mechanisms that can be used when developing and implementing a sustainable waste management program.
Enhance comprehensive training and technical assistance programs by taking the following steps: <ul style="list-style-type: none"> • Continue interagency coordination under the ITF’s oversight to identify topics that are currently being addressed as well as potential opportunities for increased efficiency.

RECOMMENDATIONS

- Receive tribal input regarding training needs and the most effective outreach approaches.
- Develop a comprehensive set of trainings that allow for regionalization tailored to local tribal needs.
- Enhance outreach to tribes regarding the available training.
- Provide follow-up technical assistance, through circuit riders or other mechanisms, to tribal communities participating in the training.
- Expand upon existing federal agencies' peer matching and mentoring efforts to allow tribal communities to further capitalize on knowledge gained through training.

Use the ITF's Work Team 3 May 2016 Report, *Proposed Approach to Improve Open Dumps Data and Solid Waste Projects and Programs in Indian Country*, to ensure that the IHS database accurately reflects the number and nature of open dumps on tribal lands and the costs of proper cleanup or closure as well as the costs of an alternative to open dumping for future solid waste disposal facilities.²²

Maintain and update the Tribal Waste Management Funding Resources Directory and the Tribal Waste Management Technical Assistance Directory, as appropriate, to ensure the information is kept up-to-date.

IX. Conclusion

Uncontrolled and improper waste disposal on tribal lands will continue to pose a risk to human health and the environment, unless and until sufficient steps are taken to address it. Agencies participating in the ITF, other federal and state agencies, non-profit organizations, and the tribes themselves all have critical roles to play in achieving effective and sustainable tribal waste management programs. To date, innovative and tangible progress has been made in addressing waste management challenges on tribal lands. Continued support of collaborative partnerships will advance the development of effective solutions that promote sustainable long-term tribal waste management programs.

This Report has identified a variety of significant barriers and strategies that can be implemented to overcome these barriers. Funding is, of course, a primary limiting factor, but the Work Team recognizes that not all needs can be funded due to tribal economies and federal, state and tribal budget limitations. Recognizing the significant fiscal challenges facing many tribal nations, tribes and federal partners should use available tribal and federal resources as effectively and efficiently as possible. All partners should also strive to be more innovative in approaches to addressing these challenges. Furthermore, tribes and the federal government should continue to foster their partnership and enhance interagency coordination to more effectively use existing resources. These actions will assist in reaching the goal of ensuring effective and sustainable waste management programs for the protection of human health and the environment, future generations, and all tribes.

²² *Proposed Approach to Improve Open Dumps Data and Solid Waste Projects and Programs in Indian Country*: <https://www.epa.gov/sites/production/files/2017-03/documents/tribalswopendumpdata508.pdf>

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APPENDIX A: List of Report Acronyms

APPENDIX A

LIST OF REPORT ACRONYMS

ADEC	Alaska Department of Environmental Conservation
ANCSA	Alaska Native Claims Settlement Act
BIA	Bureau of Indian Affairs
CAA	Clean Air Act
CFDA	Catalog of Federal Domestic Assistance
CWA	Clean Water Act
DOD	Department of Defense
DOI	Department of the Interior
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
FY	Fiscal Year
GAP	General Assistance Program
HHS	Department of Health and Human Services
HUD	Department of Housing and Urban Development
IHS	Indian Health Service
ITEP	Institute for Tribal Environmental Professionals
ITF	Infrastructure Task Force
IWMP	Integrated Waste Management Plan
MOU	Memorandum of Understanding
NAHASDA	Native American Housing Assistance and Self-Determination Act
NARF	Native American Rights Fund
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
ONAP	Office of Native American Programs
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PIH	Public and Indian Housing
RCRA	Resource Conservation and Recovery Act
RTOC	Regional Tribal Operations Committee
SDS	Sanitation Deficiency System
SDWA	Safe Drinking Water Act
STARS	Sanitation Tracking and Reporting System
SWONAP	Southwest Office of Native American Programs
TAS	Treatment in a Manner Similar to a State
TDHE	Tribally Designated Housing Entity
TSWMAP	Tribal Solid Waste Management Assistance Project
USDA	United States Department of Agriculture
USDA-RD	United States Department of Agriculture – Rural Development

APPENDIX B: Authority and Roles of Participating Federal Agencies

APPENDIX B

AUTHORITY AND ROLES OF PARTICIPATING FEDERAL AGENCIES

As described in the *Memorandum of Understanding to Better Coordinate the Federal Government Efforts in Providing Infrastructure and Promoting Sustainable Practices to Support the Provision of Safe Drinking Water and Basic Sanitation in American Indian and Alaska Native Communities*, under which the Waste Programs Sub-Workgroup and Work Team 1 are operating, the ITF member agencies have the following authority and roles with respect to waste management in tribal communities:

Department of Agriculture – Rural Development (USDA-RD) is authorized through the Water and Environmental programs to provide financial and technical assistance for the development and operation of safe and affordable drinking water and waste disposal systems. Loans and grants are made to public bodies, and not-for-profit corporations, including cooperatives and Indian tribes in rural areas and towns of under 10,000 people for new construction, replacement, expansion or other improvements to drinking water and waste facilities. The programs are administered at the local level by USDA-RD State Offices and Area Offices.

- Consolidated Farm and Rural Development Act, as amended; (7 U.S.C. 1921, *et seq.*)

Department of Housing and Urban Development (HUD) – Public and Indian Housing (PIH) is authorized, under the Native American Housing Assistance and Self-Determination Act (NAHASDA) and the Indian Community Development Block Grant program, to provide financial and technical assistance for the development and management of low-income housing and community development projects in American Indian and Alaska Native communities. The role of HUD's Office of Native American Programs (ONAP) within PIH is to ensure safe, decent and affordable housing is available to Native American families, to facilitate the development of viable communities, to create economic opportunities for Indian housing residents, and to ensure fiscal integrity in the operation of the programs. HUD provides federal assistance in a manner that recognizes the right of Indian self-determination and tribal self-governance by making such assistance available directly to the Indian tribe or its tribally designated housing entity (TDHE).

- Native American Housing Assistance and Self-Determination Act of 1996, as amended (25 U.S.C. 4101 *et seq.*)
- Title I of the Housing and Community Development Act of 1974, as amended (42 U.S.C. 5301 *et seq.*)

Department of Health and Human Services (HHS) – Indian Health Service (IHS) is authorized to provide a comprehensive primary and preventive health services delivery system for American Indians and Alaska Natives. The Office of Environmental Health and Engineering is the environmental health/engineering component of IHS, and it assists tribal communities in the development/construction of health care facilities and sanitation facilities infrastructure (water, wastewater, solid waste, and technical assistance on

operation and maintenance activities). IHS has the primary responsibility and authority to provide American Indian and Alaska Native homes and communities with the necessary sanitation facilities, health care and associated facilities, and related services.

- Snyder Act (25 U.S.C. 13)
- "Transfer Act" (42 U.S.C. 2001 *et seq.*)
- Public Law 86-121, 42 U.S.C. 2004a (Section 7 of the Transfer Act)
- Indian Self-Determination and Educational Assistance Act, Public Law 93-638, as amended (25 U.S.C. 450 *et seq.*)
- Indian Health Care Improvement Act, Public Law 94-437, as amended (25 U.S.C. 1601 *et seq.*)
- Indian Lands Open Dump Cleanup Act of 1994, Public Law 103-399, (25 U.S.C. 3901 *et seq.*)

Environmental Protection Agency (EPA) is authorized to make grants to American Indians and Alaska Natives that address the most significant public health threats associated with drinking water and wastewater systems that serve tribes. The grants may be used for the planning, design and construction of public water systems and wastewater treatment systems to serve tribes. EPA has authority to assist tribes by providing technical assistance to managers and operators of public water systems and conducting sanitary surveys of public water systems. EPA is authorized to make grants to federally recognized tribes and tribal consortia for developing and implementing solid waste programs. EPA cooperates with IHS in its responsibility to study and inventory open dumps. EPA's primary solid waste focus is to assist tribes with development and implementation of integrated waste management plans, address open dumps, rank the relative risk of open dumpsites, and prioritize them for closure.

- Safe Drinking Water Act of 1974, (42 U.S.C. 300f *et seq.*), specifically Sections 1443(a) and 1452(i)
- Clean Water Act of 1977, (33 U.S.C. 1251 *et seq.*), specifically Section 518
- Resource Conservation and Recovery Act of 1976, (42 U.S.C. 321 *et seq.*), specifically Section 8001
- Indian General Assistance Program Act of 1992, Public Law 102-497, (42 U.S.C. 4368b)
- Indian Lands Open Dump Cleanup Act of 1994, Public Law 103-399, (25 U.S.C. 3901 *et seq.*)

Department of the Interior (DOI) – Bureau of Indian Affairs (BIA) is authorized, pursuant to 25 CFR parts 162, 169 and 170, to assist in the preparation of appropriate lease documents for housing sites and required easements; to review, approve and record all required trust or restricted fee land lease and easement documents; to develop access roads to housing sites in accordance with tribal road priorities; to provide maintenance services for those roads and streets accepted into the BIA road systems; and to assist with other support, when available, that may be necessary for the timely development of housing.

APPENDIX C: Federal Infrastructure Task Force Waste Programs Sub-Workgroup Work Team 1 Member List

APPENDIX C

INFRASTRUCTURE TASK FORCE WASTE SUB-WORKGROUP WORK TEAM 1 MEMBERS

Anahma Shannon, Kawerak, Inc., Bering Strait Region
Anita O'Brian, Department of Agriculture
Apple Loveless, EPA Headquarters
Ben Shuman, Indian Health Service Headquarters
BJ Howerton, Bureau of Indian Affairs
Bobbi Barnowsky, Alutiiq Tribe of Old Harbor
Char Spruce, Keweenaw Bay Indian Community
Charles Reddoor, EPA Headquarters
Craig Kreman, Quapaw Tribe
Deborah Broermann, HUD SWONAP
Deirdre Nurre, EPA Region 9
Deleen White, Seneca Nation
Denise Roy, EPA Headquarters
Dolly Tong, EPA Region 5
Emily Luscombe, Coyote Valley Band of Pomo Indians
Errol Blackwater, Ak-Chin Indian Community
Garrett A. Smith, EPA Region 2 SEE
Georja Kriebs, Sac & Fox Nation
Hilary Atkin, Department of Housing and Urban Development
James Wilkinson, Skeo (contractor)
Jessi Just, New Mexico Recycling Coalition
John Wheaton, Nez Perce Tribe
Johnny Zimmerman-Ward, Skeo (contractor)
Julie Jurkowski, Institute for Tribal Environmental Professionals, Northern Arizona University
Kami Snowden, Tribal Solid Waste Advisory Network
Linda Nemeth, Nez Perce Tribe
Lisa Gover, Campo Band of Mission Indians
Lynette Thompson, Big Sandy Rancheria
Kelly Mortensen, Indian Health Service, Navajo Area
Kim Katonica, EPA Headquarters
Mark Junker, Sac and Fox Nation
Marta J. Burg, Region 9 RTOC Tribal Policy Advisor
Michaelle Wilson, EPA Headquarters
Paige Hingst
Rene Rickard, Haudenosaunee Environmental Task Force
Rick Campbell, Sac & Fox Nation
Rob Roy, La Jolla Band of Luiseno Indians
Roger Hancock, EPA Region 8
Sage Garcia, Pueblo of Tesuque
Sherry Davis, EPA Region 10
Stephen Price, Alaska Department of Environmental Conservation
Stephen Saulnier, Department of Agriculture

Ted Jacobson, EPA Region 10 SEE
Tonya Hawkins, EPA Headquarters
Wayne Roepe, EPA Headquarters
William “Billy” Maines, Curyung Tribe
William Patterson, Yurok Tribe

APPENDIX D: Summary Table of Barriers and Strategies

APPENDIX D

SUMMARY TABLE OF BARRIERS AND STRATEGIES

BARRIERS	STRATEGIES
A.1 Funding.	<ul style="list-style-type: none">• Conduct outreach/education to tribal leadership regarding human health and environmental impacts from improperly disposed waste, encouraging investment in tribal waste programs where funding is available.• Prepare feasibility studies and plans to explore waste-related businesses that might defray costs.• Modify requirements of funding programs to allow tribes to direct funds to where they are most needed, as allowed under the specific statutory authority.• Develop a tribal fee structure for waste collection and diversion programs.• Initiate a dialogue with federal agencies to discuss eligibility requirements for multi-media grant programs.
A.2 Enhanced federal interagency coordination.	<ul style="list-style-type: none">• Clearly define the roles and responsibilities of each agency that has authorities and programs that address tribal waste-related needs.• Use the ITF as a mechanism to coordinate multiple efforts to address those needs on an ongoing basis. (<i>Note:</i> specific recommendations for the ITF to implement are listed in Section VIII of this Report.)• Maintain continued interagency efforts to work in close collaboration with tribes.

BARRIERS	STRATEGIES
<p>B.1 Limited awareness of available federal waste management-related resources and the need to keep existing resource references updated.</p>	<ul style="list-style-type: none"> • Identify up-to date potential sources of financial support, including for circuit riders. Financial resources will be updated and maintained through the Tribal Waste Management Funding Resources Directory. The Work Team developed the Directory and populated it with current information regarding funding and technical assistance that is available from over 20 federal agencies identified as having resources to address tribal community waste-related needs. • Update and maintain the Tribal Waste Management Technical Assistance Directory. The Work Team developed the Directory to provide tribal communities with a centralized source for waste-related technical assistance resources and information. • Encourage federal agencies, technical assistant providers and tribes to provide support for information resource-sharing on waste-related topics. • Provide input to Grants.gov to make services more user friendly. • Offer trainings and/or “how-to guides” on the effective use of the Tribal Waste Management Funding Resources Directory, the Tribal Waste Management Technical Assistance Directory and the Grants.gov databases. • Encourage the use of RTOCs as an information-sharing vehicle among tribes and/or between tribes and federal agencies.
<p>B.2 Tribal leader support/community participation.</p>	<ul style="list-style-type: none"> • Ensure ongoing education/outreach/community event programming tailored to community needs and culture for maximum effect. • Implement the ITF Waste Work Team 2 Community Engagement Strategy: Issues to Consider When Planning and Designing <i>Community Engagement Approaches for Tribal Integrated Waste Management Programs</i>. • Enable circuit riders to assist with educational activities.
<p>B.3 Capacity to retain qualified staff.</p>	<ul style="list-style-type: none"> • Use tribal government-provided funding from sources such as waste-related businesses where feasible. • Consistent with statutory authority, ensure maximum flexibility in the use of federal funding to cover tribal waste utility program operations and maintenance activities. • Ensure staff access to waste management-related trainings through the development of a comprehensive training program. In addition, consistent with statutory authority, ensure maximum flexibility in the use of funding to cover travel and other associated costs. A federal training program may be beneficial for nationwide uniformity and consistency, but localized trainings are also needed (e.g., the Backhaul Alaska Program).

BARRIERS	STRATEGIES
<p>B.4 Access to and alignment of training and technical assistance activities to ensure consistent and comprehensive training programs.</p>	<ul style="list-style-type: none"> • Continue interagency coordination under the ITF’s oversight to identify what is currently being addressed, and where there may be opportunities for increased efficiency. • Receive tribal input regarding training needs and effective tribal outreach approaches. • Develop a comprehensive set of trainings that allow for regionalization tailored to local tribal needs. • Identify mechanisms to provide information to tribes regarding available trainings. • Provide follow-up technical assistance, through circuit riders or other resources, to tribal communities participating in trainings. • Expand upon existing federal agencies’ peer matching efforts to allow tribal communities to further capitalize on knowledge gained through the trainings. • Provide open dump assessment training regarding the reporting and updating of information in IHS databases. • Identify other technical assistance opportunities to address tribal needs.
<p>B.5 Resources for implementation activities.</p>	<ul style="list-style-type: none"> • Consistent with statutory authority, ensure maximum flexibility in the use of funding to provide ongoing support for waste management activities. • Encourage tribes to develop MOUs with local governments, non-profits and local regional businesses to support tribal implementation efforts.
<p>B.6 Enforcement authority and capability.</p>	<ul style="list-style-type: none"> • Develop MOUs with local governments to address jurisdictional gaps, and coordinate efforts to address waste-related issues within tribal communities. • Consistent with statutory authority, ensure maximum flexibility in the use of federal funding to provide ongoing support to tribal enforcement programs. • Support tribal codes and ordinances training from various sources and organizations. • Provide access to the Native American Rights Fund (NARF) library of waste-related ordinances. (<i>Note:</i> this is referenced in the Tools tab of the Tribal Waste Management Technical Assistance Directory.)

BARRIERS	STRATEGIES
<p>C.1 Costs for rural waste management services.</p>	<ul style="list-style-type: none"> • Develop data/information on tribal waste program needs. • Use the Tribal Waste Management Program Sustainability Evaluation Tool to evaluate how tribal waste management programs are currently operating and to identify specific areas where additional support is needed in developing sustainable tribal waste management programs. • Consistent with statutory authority, ensure maximum flexibility in the use of existing funding to ensure that high-priority tribal needs can be addressed. • Reduce the costs of hazardous waste and hazardous materials transportation to end destinations through a centrally coordinated and streamlined waste backhaul service. For example, the Backhaul Alaska Program is being piloted in 35 communities in FYs 2018 to 2020 and will be expanded to additional communities throughout Alaska each subsequent year. • Cluster communities in “wastesheds” to collaborate on infrastructure needs and streamline costs. • Use the control tower/hub-and-spoke model – develop uniform regional and statewide guidance, processes and procedures to coordinate regular collection, transport and disposal services, and special collection events. • Develop an electronically accessible document that contains information on new and used solid waste management equipment that is available for purchase or lease (e.g., available from governments and private businesses) on a statewide or regional basis.
<p>C.2 Support in building sustainable recycling and other waste diversion programs.</p>	<ul style="list-style-type: none"> • Develop data/information on tribal sustainable materials management program needs. • Develop feasibility studies and plans for waste-related businesses. • Incentivize volunteer community participation in waste diversion programs. • Facilitate tribal community participation in hub-and-spoke model recycling programs.

BARRIERS	STRATEGIES
<p>C.3 Management of construction/demolition waste.</p>	<ul style="list-style-type: none"> • Add cleanup and proper disposal requirements to construction contracts and tribal laws and include example language/tribal laws in the Tribal Waste Management Technical Assistance Directory. • Disseminate laws or information from other jurisdictions. • Circulate EPA bid specifications for demolition associated with brownfields, including cleanup responsibilities. • All federal departments and agencies, including self-governance tribes and their contractors, should properly manage all waste produced by federally conducted and supported activities/projects on tribal lands and should ensure that Federal Acquisition Regulation (FAR) clauses related to cleaning up construction sites (FAR 36.512 and 52.236-12) are included in all federal contracts, grants and/or cooperative agreements. The clauses should ensure that waste that is generated is properly managed (repurposed, recycled, reused) or disposed of in a compliant disposal facility.
<p>C.4 Proper disposal of waste.</p>	<ul style="list-style-type: none"> • Enhance interagency coordination and leverage federal resources in close coordination with tribal partners to develop sustainable waste management programs. • Ensure that IHS databases are current and accurate, and that the data includes cost estimates for open dump cleanup or closure funding. • Support tribal community outreach/education/cleanup events to minimize open dumping by encouraging voluntary participation in waste management programs, including proper waste disposal and waste diversion. • Promote tribal compliance and enforcement programs to deter improper waste disposal by community members and outsiders. • Provide support to tribal waste diversion programs in order to assist with minimizing the improper disposal of waste. • Facilitate manufacturer take-back of large waste items, such as old appliances and e-waste, to minimize the risk of such items being disposed of improperly. Manufacturer take-back programs are the result of voluntary efforts by manufacturers and state laws; both approaches can be encouraged. • Incorporate waste minimization as a strategy for controlling waste collection, transportation, disposal and recovered materials reprocessing costs.
<p>C.5 Impacts of extreme weather patterns.</p>	<ul style="list-style-type: none"> • Engage in adaptation planning. • Formulate a plan to properly manage disaster debris.

APPENDIX E: Solid Waste Management Challenges in Alaska

APPENDIX E

SOLID WASTE MANAGEMENT CHALLENGES IN ALASKA

In Alaska, access to properly constructed and maintained waste-disposal facilities is either minimal or cost prohibitive. Only a small number of rural Alaska communities have road access, while most rely on barges or planes to receive goods or ship out recyclable materials. The remoteness, combined with extreme weather patterns and other locational issues, make sustainable solid waste management in Alaska extraordinarily difficult.

Jurisdictional Framework

There are 229 federally recognized tribes in Alaska. Notwithstanding this large number of tribal entities, the Indian country land base in Alaska is very limited. For instance, only one tribe in Alaska has a formal Indian reservation. The Alaska Native Claims Settlement Act (ANCSA) generally addressed Alaska Native claims to the land by transferring titles to 12 Alaska Native Regional Corporations and over 200 local village corporations. These native corporate landholdings generally do not qualify as Indian country under federal law (as defined at 18 U.S.C. § 1151). Given this unique landholding structure and the limited Indian country land base, there are significant limitations across EPA's programs on Alaska tribes' ability to be delegated the management of federal programs on their lands. Similar limitations exist with regard to certain federal funding programs. Further, treatment in a manner similar to a state (TAS) is currently unavailable under the Resource Conservation and Recovery Act; thus, no tribe in Alaska has TAS for purposes of a solid waste management program.

The Alaska Department of Environmental Conservation (ADEC) provides primary oversight and regulation for Alaska landfills outside of Indian country through its EPA-approved solid waste program. Because, as described above, Alaska native corporate landholdings generally do not qualify as Indian country under federal law, the approved ADEC program applies to the great majority of lands traditionally associated with Alaska Native Village tribal entities. The Federal Register, through the Governor's certification of August 6, 1999, cites that the State has exempted Class III municipal landfills from those requirements of 40 CFR part 258 (RCRA) that are more stringent than the requirements imposed on Class III landfills under 18 Alaska Administrative Code 60, as may be amended.²³ This establishes full adequacy with respect to EPA's part 258 municipal landfill criteria, meaning that Class III landfills are exempt from the federal criteria of 40 CFR 258 under the State's approved regulatory program. There is the concern that the exemption of Class III permitted landfills from certain regulatory requirements (e.g., liners, daily covering) reduces health and environmental safeguards.

Landfill Challenges

Alaska has three different designations for municipal solid waste landfills: Class I, Class II and Class III. Class I landfills receive more than 20 tons of waste a day and are found in Alaska's urban areas such as Anchorage and Fairbanks. Class II landfills receive between 5 and 20 tons

²³ Federal Register, Volume 65, Issue 3 (January 5, 2000).

of waste a day and include most hub communities such as Bethel and Nome. The rest of Alaska's communities have Class III landfills, which receive less than 5 tons a day, are unlined and are allowed to burn municipal solid waste if contained. Nearly all of these are in Alaska Native Villages.

In Alaska, waste may only be disposed of in a permitted landfill. Currently, roughly 75 percent of the Class III landfills are permitted. The remainder have not filed a permit application or are not eligible for a permit due to locational issues such as proximity to a water body. While ADEC's Solid Waste Program has worked hard over the years to increase the number of permitted facilities, having a permit does not mean a landfill is in complete compliance.

The Solid Waste Program uses a Waste Index to score a landfill during an inspection. This Waste Index looks at seven waste related categories to determine an inspection score. These include: Landfill Site Control, Burning, Landfill Operations, Landfill Water Impacts, Special Waste Management, Administration, and Waste Management Improvement Programs. The higher the score a landfill receives, the more protective it is of human health and the environment. A score of 70 percent is considered to be a minimum standard. As of June 2016, approximately 58 percent of all Class III landfills, permitted and unpermitted, scored below 70 percent and approximately 20 percent of Class II landfills received a score of 40 percent or lower.

The reasons for these lower scores or non-compliance reflect the challenges of life in rural Alaska. A lack of funding means little to no money for full-time landfill staff, heavy equipment, routine operations and maintenance, fencing for access control, or even informational signage. This lack of funding, coupled with limited transportation services, makes shipping of things such as household hazardous waste to proper facilities extremely expensive and a major health issue.

Location is another issue that can lead to non-compliance. There are large areas in Alaska that are wetlands, meaning communities cannot dig and have little to no access to cover material. Many of these communities have no roads, and rely instead on boardwalks, so heavy equipment can only be used in the winter when the ground is frozen. For these types of tundra communities to be in compliance with minimum landfill design criteria, they would have to construct an engineered landfill on a 2-foot gravel pad, completely fenced and bermed. A new landfill in any of these communities would be a multi-million-dollar endeavor. An additional challenge is that most funders require a 25 percent match, which can easily translate to \$500,000 or more, representing a virtual impossibility for any small, rural Alaska community to meet. These amounts also do not cover the costs of associated infrastructure or ongoing operations and maintenance.

Construction/Demolition Waste

Solid waste management challenges in Alaska are further aggravated by improper disposal of construction and demolition waste. In the past, the State of Alaska has had little funding and limited staff to properly inspect solid waste management in rural and remote Alaska villages. At times, there have been only one or two ADEC Solid Waste Program inspectors assigned to oversee over 180 rural communities across the State. This lack of oversight created a sense in building contractors that their waste was not regulated and they could dispose of it at will. The

ADEC Solid Waste Program has been working hard in recent years to change how construction and demolition debris is managed in rural Alaska and improve compliance with waste program requirements. However, managing construction project waste is still a major challenge.

Construction/demolition debris can include metal, glass, wood, bricks, rubble, dry wall, roofing materials, tiles, insulation, plastic, Styrofoam, and concrete. State and federal law requires that building contractors dispose of their waste in a permitted landfill. However, in Alaska there may not be a permitted landfill for hundreds of miles, and that landfill may not be accessible by road. Even if there is an on-site landfill, it will rarely be larger in size than 5 acres, and the waste generated by a large construction or demolition project could easily fill up available landfill space, leaving little or no room for the ongoing disposal of community waste, potentially requiring the development of additional waste disposal facilities, and ultimately posing a threat to human health and the environment.

Extreme Weather Patterns

Perhaps the most alarming impact to solid waste management comes from extreme weather patterns. While these patterns affect the entire planet, nowhere are their effects more apparent than in the Arctic. In Alaska, the effects of extreme weather patterns can be seen in a variety of ways, such as increased storm surges accelerating coastal erosion and drier winters and summers increasing the length and severity of the wildfire season.

For solid waste management in Alaska Native Villages, extreme weather events can have devastating impacts. A large number of rural villages have landfills exposed to shifting rivers, rising sea levels and storm surges. Coastal shorelines and interior river banks have eroded so severely in some Alaska villages that closed landfills have begun to fall into waterways releasing unknown contaminants, or access roads to the community landfill are at risk of disappearing completely. In Kotlik, Alaska, the community landfill is on a small island across the river from the community. The banks of the island are eroding so quickly that the community has to push back the waste every year. At some point, there will not be anywhere left to push the waste. For low-lying coastal communities such as Newtok and Shishmaref, not only are erosion and rising sea levels threatening to completely wash away their landfills; in less than 20 years, their entire villages will be washed away.

For villages facing these erosion issues, the challenge becomes what to do with their existing landfills. A landfill at risk of eroding away has few options: dig out and relocate all the waste to a more suitable location or close the landfill by applying 2 feet of compacted cover material (per State of Alaska regulations) and hope for the best. While both of these options are very costly on their own, their costs will more than double because either option necessitates the creation of a new landfill.

The expansion of the wildfire season due to extreme weather patterns has another profound effect on waste management in Alaska Native Villages. Class III landfills, which exist in nearly all Alaska Native Villages, are not required to comply with all RCRA Subtitle D requirements. This means they are not required to be lined and are allowed to burn municipal solid waste to reduce the volume that requires landfill disposal, necessitating less cover material. This makes

burning an attractive alternative in small Alaska Native Villages with little to no heavy equipment, limited landfill space and no access to cover material. As a result, burning for waste reduction is practiced in almost every Class III landfill in Alaska.

The State of Alaska requires that any burning of waste be contained in appropriate burn units. This practice is maintained in some communities where funding is in place to manage and monitor the burning, which helps to extend the life of the landfill and increase public safety. There are a lot of burning activities that are uncontrolled and not contained, thus causing landfill fires that in some cases escape the landfill onto surrounding lands and forest. When drier summers combine with a lack of enclosed burn units and proper burn management, a disaster is not too far away. Since 2005, the Alaska Division of Forestry has documented over 40 wildfires that originated from solid waste burns that escaped the landfill in Alaska Native Villages.