INSTITUTE FOR TRIBAL ENVIRONMENTAL PROFESSIONALS
TRIBAL SOLID WASTE AND EDUCATION ASSISTANCE

**Developing and Implementing a Tribal Integrated Solid Waste Management Plan**
Palm Springs, CA
April 12-14, 2016

# Course Agenda

Course Instructors:
Roberta Tohannie, ITEP
Joshua Simmons, Prosper Sustainably

## Day 1: Tuesday, April 12

8:30 – 9:00am Participant and Instructor Introductions

9:00 – 9:45am Session 1: Course Details and Integrated Solid Waste Management Overview
Instructor(s): Roberta Tohannie
- Course Agenda
- The EPA's Five ISWMP Elements
- Intro to Integrated Solid Waste Management
- What is the Purpose of an ISWMP?
- Significance of ISWMPs for Tribes

9:45 – 10:30am Session 2: ISWMP Development and Pre-Planning
Instructor(s): Josh Simmons
- Pre-Planning
  - Preliminary Scoping / Planning Boundaries
- Planning Process and Timeline
  - Roles, responsibilities, timeframe, deadlines, etc.
- ISWMP Planning Team Generating buy-in
- Information Gathering
  - Info Sources, Internal v. External, Existing v. New
- Structuring Your ISWMP
  - Examples and Template

10:30 – 10:45am BREAK

10:45 – 11:15am Session 3: Community Profile and Service Area
Instructor(s): Roberta Tohannie
- History, Geography, Climate, Natural Resources, Land Use, Demographics, Government, Economy

11:15am – 12:00pm Session 4: Program Administration, Laws, and Enforcement
Instructor(s): Josh Simmons
- Program Administration (current & future)
  - Organization Chart, Decision-Making, Roles & Responsibilities

- Constitutional v. Constitutional Tribes
- Partnerships (current & future)
- Waste Laws, Compliance, and Enforcement (current & future)

12:00 – 1:00pm LUNCH

1:00 – 2:45pm <u>Session 5</u>: Current and Waste Management Practices and Conditions
Instructor(s): Josh Simmons

- Current Waste Generation and Management
  - Generators, Waste Streams, Generation Rates
    - Activity / Discussion
    - Types of Generators & Waste Streams; Determining Generation Rates
      - Waste stream assessment and characterization
      - Non-hazardous wastes
      - Special and hazardous wastes
  - Open dumps and uncontrolled wastes
  - Waste Management Strategies & Practices (including roles & responsibilities)
    - Activity / Discussion
    - Source Reduction
    - Reuse, Recycling, Disposal, Unaddressed
    - Identifying Limitations and Deficiencies
  - Current Waste Management Costs and Funding/Revenue Sources
  - Case Study

2:45 – 3:00pm BREAK

3:00 – 4:15pm Group work and discussion

4:15 – 4:45pm <u>Session 6</u>: Waste Assessment and Characterization
Instructor(s): Josh Simmons

- Hands-on Training Preparation
- Safety, Rules, and Protocol

4:45 – 5:00pm Reflective Writing

**Day 2: Wednesday, April 13, 2016**

8:30 – 9:00am Questions and Answers from Reflective Writing

9:00 – 10:30am Session 7: Future Waste Management Practices and Conditions
Instructor(s): Josh Simmons

- Long Term Goals and Priorities
- Future Waste Generation and Management
    - Generators, Waste Streams, Generation Rates
        - Identifying and Projecting Possible Changes
        - Identifying and Strategies/Options
            - Source Reduction, Reuse, Recycling, Disposal, etc.
            - Feasibility Studies
    - Open Dumps, Uncontrolled Wastes, and Other Issues
        - Identifying and Projecting Possible Changes
        - Identifying and Strategies/Options
    - Improvements Beyond Basic Compliance
    - Future Waste Management Costs and Funding/Revenue Sources
        - Funding Your Plan
            - Calculating Costs and Revenue
            - Identifying Possible Funding Sources
- Case Study

10:30 – 10:45am BREAK

10:45 – 11:30am Session 8: Public Outreach Strategies
Instructor(s): Roberta Tohannie

- Current & Future
    - Current Public Outreach Strategies
    - Identifying Future Public Outreach Strategies Options
- Community members
- Tribal Council
- Businesses and partnerships

11:30am – 12:30pm Lunch (on your own)

12:30 – 12:45 pm Load up on bus

12:45pm – 6:00pm Hands-On Field Trip – Waste Stream Assessment/Characterization at Santa Rosa Cahuilla Reservation

**Day 3: Thursday, April 14, 2016**

8:30 – 8:45am Logistics and Travel Issues

8:45 – 10:00am Session 9: Waste Assessment Debrief
Instructor(s): Josh Simmons
- Group Discussion Organizing, Analyzing, and Integrating Data
- Utilizing for Future Waste Management Strategies

10:00 – 10:15am BREAK

10:15am – 12:00pm Session 10: Selecting Options, Drafting, and Revising Your Plan
Instructor(s): Josh Simmons
- Selecting Options and Strategies
  - Administration
  - Waste Laws, Compliance, and Enforcement
  - Education & Outreach
  - Funding and Partnerships
  - Plan Review & Updates
- Developing a Living Action Plan
- EPA-Tribal Environmental Plan (ETEP) Considerations
- Introduction, Purpose, Executive Summary
- Additional Information / Appendices
- Monitoring and Evaluation
- Reviewing and Updating the Plan
- Implementing the Plan (who, how, etc.)
- Case Study(ies)

12:00 – 1:00pm LUNCH

1:00 – 1:30pm Session 11: Plan Approval
Instructor(s): Roberta Tohannie
- Who approves the plan and how?

1:30 – 2:30pm Tribal Case Studies – ISWMP Start to Finish Walkthrough (tying it all together)
Instructor(s): Josh Simmons
- ISWMP Start to Finish Walkthrough (tying it all together)
- Ongoing Implementation

2:30 – 2:45pm BREAK

2:45 – 4:30pm Group work and discussion

4:30 – 4:45pm Activity: Develop and Share ISWMP Development Strategy / Next Steps

4:45 – 5:00pm Reflective Writing, Evaluations, and Course Closing

INSTITUTE FOR TRIBAL ENVIRONMENTAL PROFESSIONALS
Tribal Solid Waste and Education Assistance Program

**Developing and Implementing a Tribal ISWMP**
**April 12 – 14, 2016 Palm Springs, CA**

## Course Participants

| Name | Title | Tribe/Address | Email | Ph. |
|---|---|---|---|---|
| Javier Aceves | Environmental Analyst | Cabazon Band of Mission Indians<br>84-245 Indio Springs Parkway, CA 92203 | jaceves@cabazonindians-nsn.gov | 760-342-5000 X84780 |
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| Marcia Eiynck | Environmental Tech and Solid Waste Mgnmt. Specialist | Grand Portage Band of Lake Superior Chippewa<br>P.O. Box 428<br>Grand Portage, MN 55605 | marciae@grandportage.com | 218-475-2028 |
| Robert T. Erskine | Energy/ Sustainability Solid Waste Spec. | Nez Perce Tribe<br>114 Veterans Drive<br>Lapwai, ID 83540 | roberte@nezperce.org | 208-843-7368 |
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| Tracy Lewis | IGAP Coordinator | Native Village of Kongiganak<br>P.O. Box 5069<br>Kongiganak, AK 99545 | kongiganak.igap2@gmail.com | 907-557-5223 |
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| | | | | |
|---|---|---|---|---|
| Lewis Phillip | Tribal Council Administrator | Kongiganak Tradtional Council<br>P.O. Box 5069<br>Kongiganak, AK 99545 | kong.tribe@gmail.com | 907-557-5226 |
| Andrew Pittman | Environmental Outreach Coordinator | Los Coyotes Band of Cahuilla and Cupeno Indians<br>P.O. Box 189<br>Warner Springs, CA 92086 | ajpittman23@yahoo.com | 760-782-0712 |
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| Marlene Vest | Environmental Coordinator | Native Village of Kiana<br>P.O. Box 69<br>Kiana, AK 99749 | environmental@katyaaq,org | 907-475-2109 |
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## Course Instructors

| Name | Title | Address | Email | Ph. |
|---|---|---|---|---|
| Roberta Tohannie | Program Coordinator Sr. | ITEP<br>NAU Box 15004<br>Flagstaff, AZ 86011 | roberta.tohannie@nau.edu | 928-523-2082 |
| Joshua Simmons | Principal Consultant / Attorney | 4692 Carpinteria Ave. #29<br>Carpinteria, CA 93013 | jsimmons@prospersustainably.com | 805-694-8089 |

## Course Guest:

Tonya Hawkins, Co-Team Leader; US EPA Office of Resource Conservation and Recovery (ORCR) Tribal Programs Team. Address: 1200 Pennsylvania Avenue (5303P); Washington, DC 20460. Ph. # 703-308-8278. Email: Hawkins.Tonya@epa.gov

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**Tribal Waste and Response Assistance Program (TWRAP)**

# Developing and Implementing a Tribal Integrated Solid Waste Management Plan

**April 12-14, 2016**
**Palm Springs, CA**

## SESSION 1:

# Course Details and ISWMP Overview

**Roberta Tohannie, ITEP**

# COURSE AGENDA

- Presentations
- Small group discussions
- Waste Characterization Event:  Wed., 4/13
- Reflective Writing
- Travel reimbursement overview

# INTRO TO ISWMP

**What is Solid Waste?**

- As defined under the Resource Conservation Recovery Act (RCRA)
  - Any solid, semi-solid, liquid, or contained gaseous materials discarded from industrial, commercial, mining, or agricultural operations, and from community activities. Solid waste includes garbage, construction debris, commercial refuse, sludge from water supply or waste treatment plants, or air pollution control facilities, and other discarded materials.
- According to Zero Waste America
  - A resource that is not safely recycled back into the environment or the marketplace.

# INTRO TO ISWMP

**What Is Municipal Solid Waste (MSW)?**

**Defined as:**

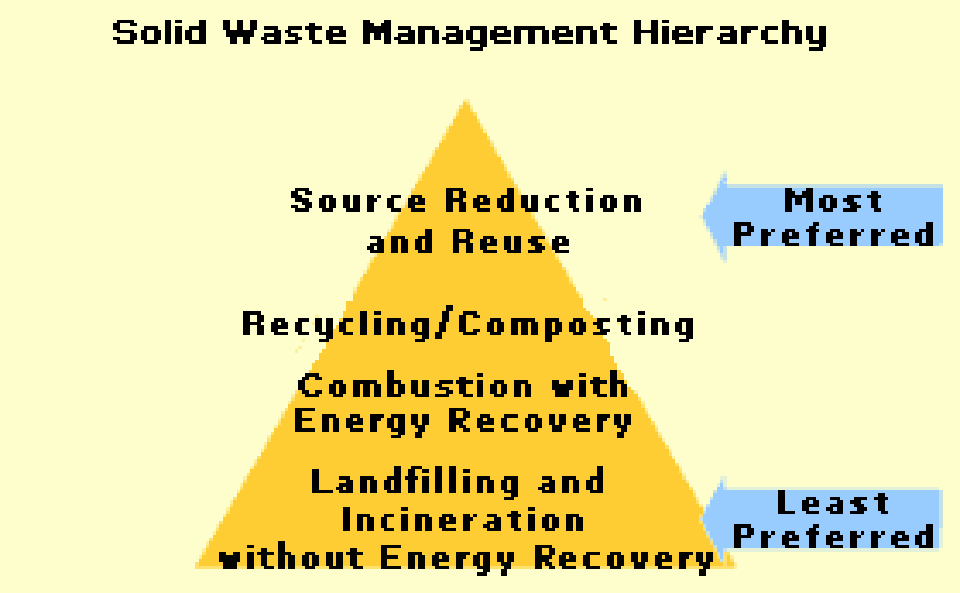
- Durable goods (e.g., appliances, tires, batteries)
- Non durable goods (e.g., newspapers, books, magazines)
- Containers and packaging, food wastes, yard trimmings, and miscellaneous organic wastes from residential, commercial, and industrial non process sources

# INTRO TO ISWMP

- To address the increasing quantities of MSW, the U.S. EPA recommends that communities adopt **"integrated waste management"** systems tailored to meet their needs.
- The term "integrated waste management" refers to the complementary use of a variety of waste management practices to safely and effectively handle the MSW stream.
- An integrated waste management system will contain some or all of the following elements: source reduction, recycling (including composting), combustion, and/or landfilling.
- Source reduction and recycling are preferred over combustion and landfilling

# INTRO TO ISWMP

**February 1989: U.S. EPA's *Agenda for Action* called for "a new solid waste management ethic" that reflected in what has come to be referred to as the "solid waste management hierarchy"**



# INTRO TO ISWMP

**An ISWMP Describes:**

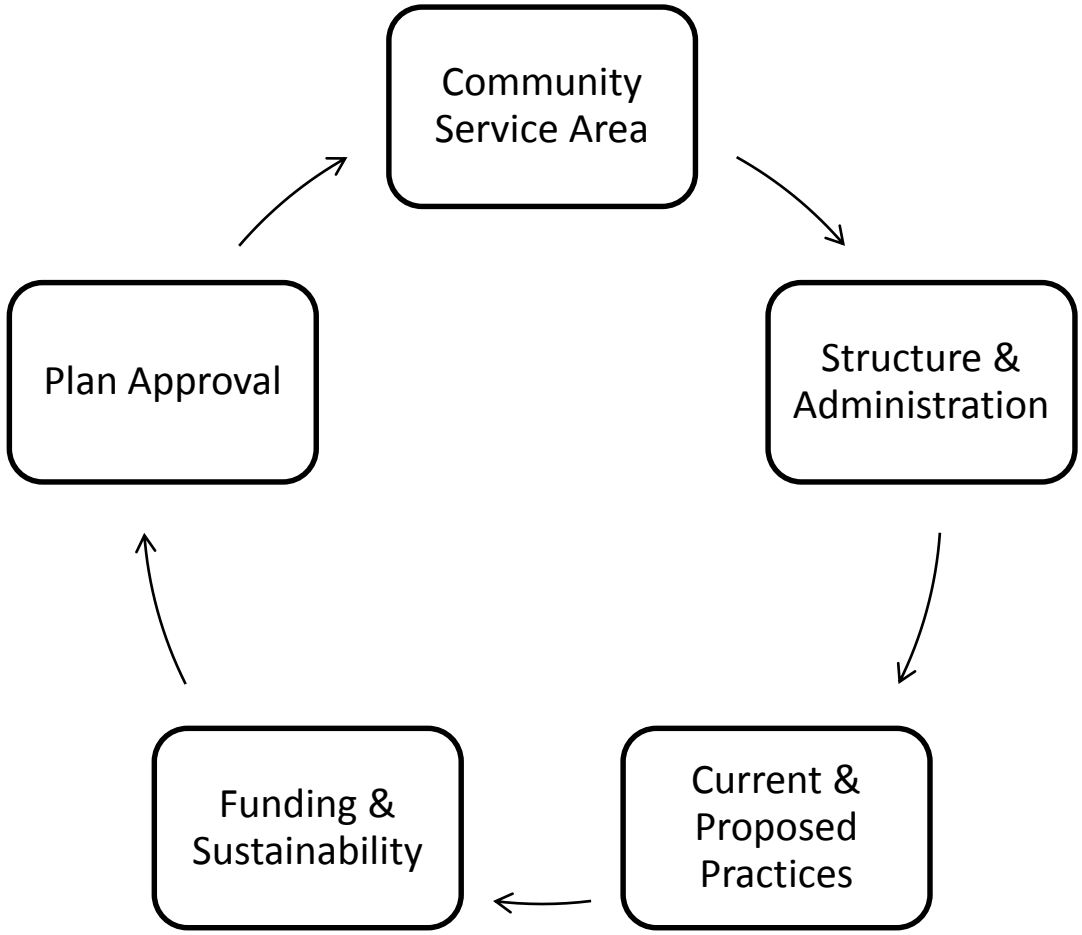
- Current and recommended methods, arrangements, and facilities for waste reduction
- Recycling
- Refuse collection
- The transportation, processing, and disposal of waste, and
- The organization, administration, and funding of the solid waste system operations, programs, and policies.

# PURPOSE OF AN ISWMP

**The Process**

- A tool that will enable you to evaluate needs, detail current structure and practices, prioritize concerns, plan for the future, and consider ways to implement activities. For example, some ISWMPs cover a 20 year span of time and are reviewed every 5 years.
- It sets the tone for community and governmental acceptance/support as well as the internal administration and implementation of the plan.

# FIVE ISWMP ELEMENTS



# WHERE DID THESE ELEMENTS COME FROM?

- 2005 USEPA Strategic Target: “By 2011 increase by 118 the number of tribes covered by an integrated waste management plan compared to FY06.”
- In the fall of 2005 the USEPA Regions submitted 22 tribal ISWMPs for consideration -Five “critical elements” common to these were identified.
- Other agencies were asked their opinion, as well as tribal committees and training organizations.
- “The use of these criteria is meant to be optional but optimal.”
- Key point: your plan should be relevant to your situation and a useful tool for your planning

# COMMUNITY SERVICE AREA

**Creating a Profile of the Land**

- Populations and Households
  - How many people need to be served? How much growth is expected?
  - Where are the homes that need service? Is housing increasing?
- Community and Natural Resources
  - Developing community pride in the program.
  - What community assets you can work with?
  - A program that complements protection of natural resources.
- Geography, Climate, Cultural and Land Use Concerns
  - How will geographic features affect the program?
  - How will climate affect collection, storage, transfer, and disposal?
  - What cultural and land use concerns need to be factored into the plan?
- Economy
  - How can the local economy support the plan?
  - What special economic or business concerns need to be addressed?
  - How will economic development affect the program?

# STRUCTURE & ADMINISTRATION

**Establishing Your Framework**

- Developing a Planning Team
  - Who needs to be involved in the planning process?
  - How will the community be involved?
- Program Administration
  - Who will manage the program? (e.g. utilities, environment, land use, or a special board)
  - Developing job descriptions, accounting practices, certification/training needs, etc.
- Codes and Ordinances
  - What types of codes are currently in place?
  - Using the ISWMP to map out current regulatory gaps.
- Compliance and Enforcement
  - Defining goals in both compliance and enforcement.
  - Establishing and delegating authority.

# CURRENT & PROPOSED PRACTICES

**Assessing and Determining Waste Handling and Disposal Processes**

- Waste Stream Characterization
  - Generators: residential, commercial and industrial
  - Weight/volume and composition
  - Possibilities for diversion
- Illegal Dumping and Open Dumps
- Special and Hazardous Wastes
- Waste Reduction Strategies
- Limitations of Current Operations
- Planning for the Future
- Public Participation and Developing Partnerships

# FUNDING & SUSTAINABILITY

**Making Sure Your Goals Can Be Met**

- Funding Your Plan
  - Grant money?
  - Tribal funding?
  - Pay as you go?
- Long-Term Goals and Priorities
  - Establishment of transfer stations?
  - Regulated landfill?
  - Waste reduction activities?
- Improvements Beyond Basic Compliance
  - Conservation and innovation
- Additional Resources
  - Partnerships with other entities?

# PLAN APPROVAL

**Putting It All Together And Getting It Approved**

- Putting the Pieces All Together
- Generating Support for the Plan
- Documenting Community Involvement and Support
- Who Approves the Plan?
- Who Implements the Plan?

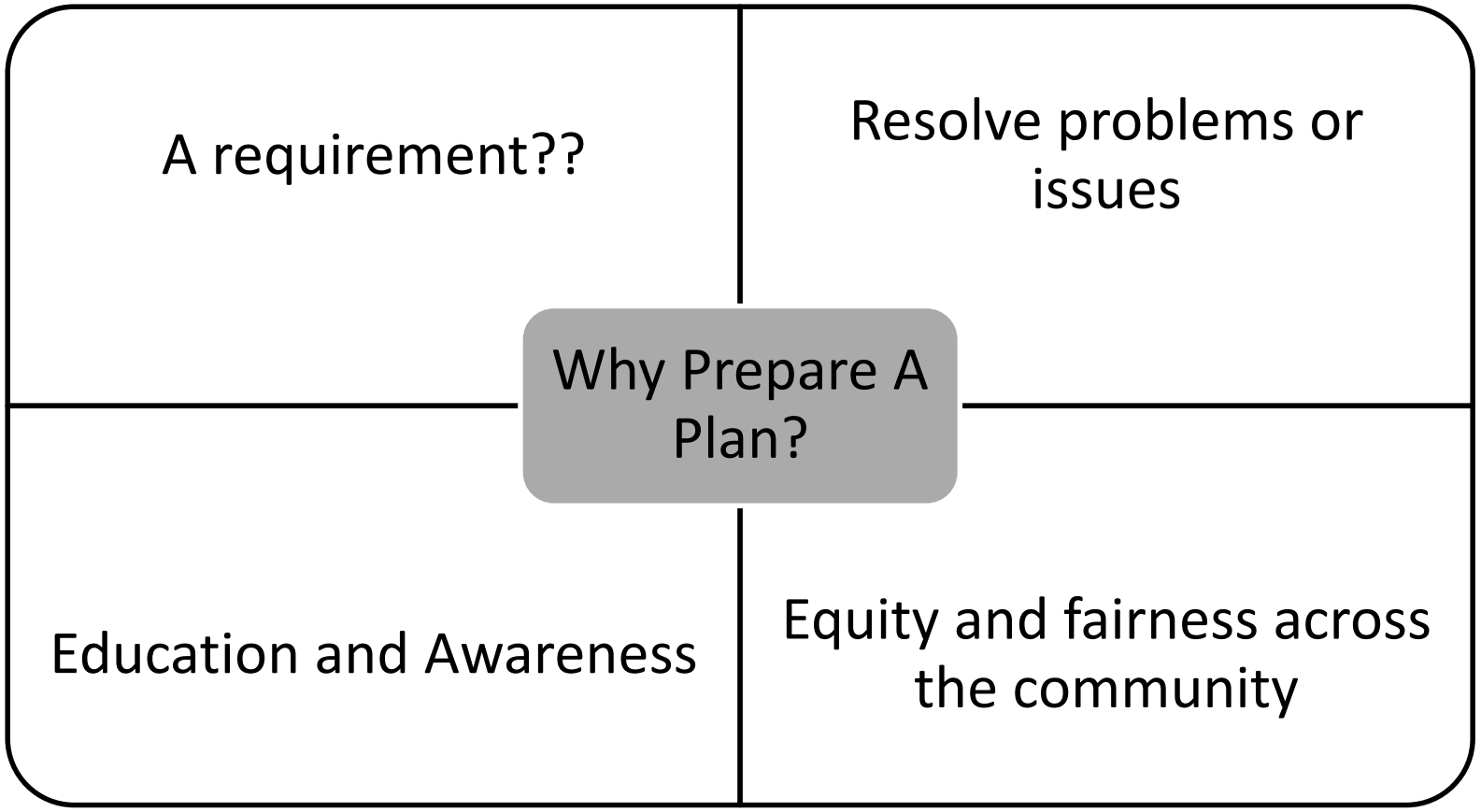
# SIGNIFICANCE OF ISWMPs FOR TRIBES

***Solid waste management touches all aspects of tribal and village life – public health, environmental quality, economic development and prosperity, community pride and identity, tribal culture, and land stewardship. But tribes often have limited resources. Equally important competing interests, such as education, physical and mental health, employment, and economic development, often take precedence over solid waste and exhaust tribal funds."***

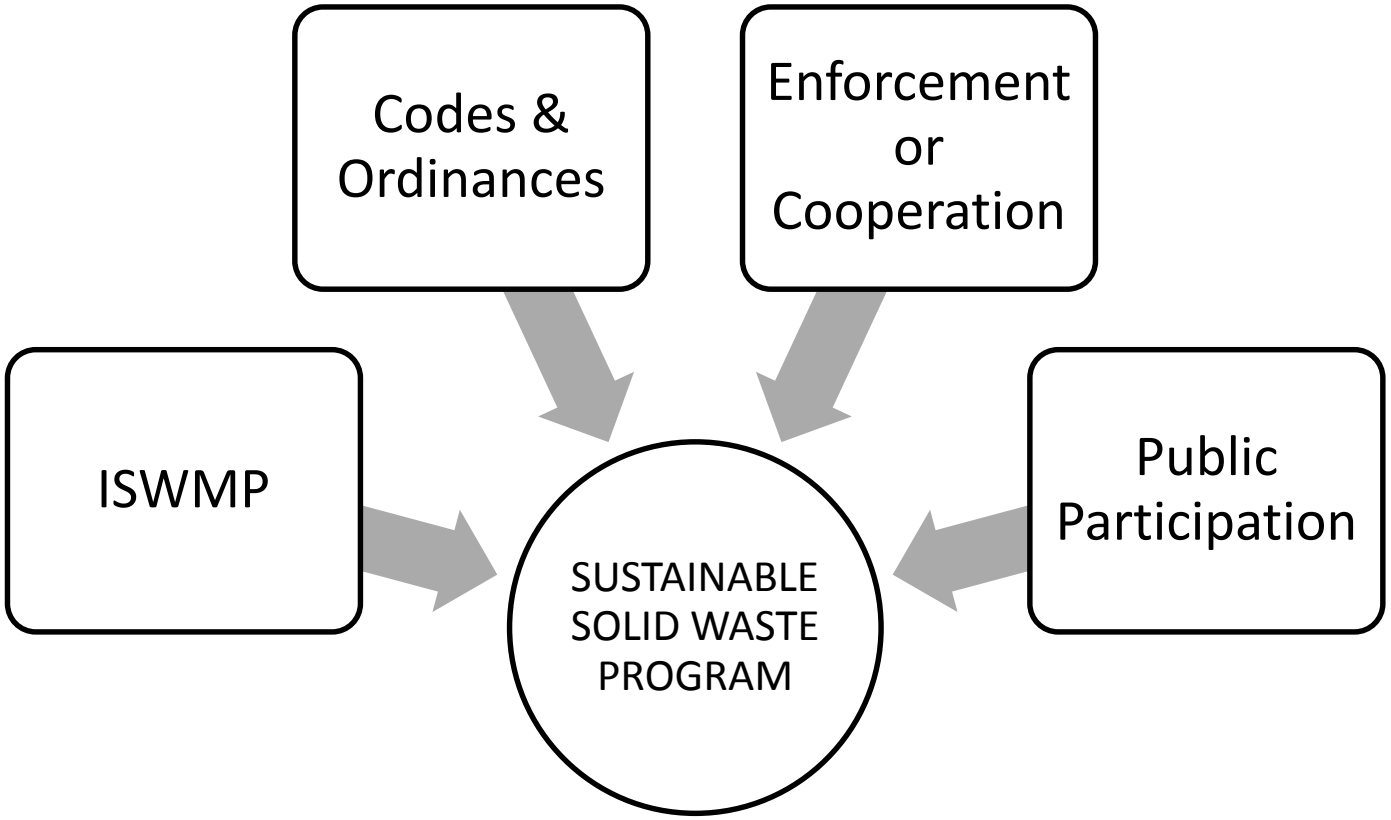
***From "EPA Tribal Decision-Maker's Guide to Solid Waste Management"***

***archive.epa.gov/wastes/wyl/web/pdf/trib-dmg.pdf***

# SIGNIFICANCE OF ISWMPs FOR TRIBES



# TRIBAL SOLID WASTE MANAGEMENT



# Any Questions?

# SESSION #2:
# ISWMP Pre-Planning, Buy-In, Information Gathering, Plan Structure

**PRESENTED BY:**

**Josh Simmons**
**Principal Consultant / Attorney / Collaborative Strategist**
**www.ProsperSustainably.com**

**April 12, 2016**

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# New v. Revised ISWMP
# Same Considerations & Strategies

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# Preliminary Scoping

- Determine planning boundaries
  - What will be the geographic boundaries of your ISWMP?
  - What entities and activities will be addressed?
- Determine the planning timeline
  - When will you start?
  - When will you complete a draft?
  - What will be the review period?
  - When will the final plan be adopted by?
- ACTIVITY
  - Answer these questions in your groups
  - Report answers back to class

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# Planning Boundaries

- Geographic Boundaries
  - Jurisdictional considerations
- Inclusion/Exclusion of Activities and Entities
- Consider available resources in determining scope of ISWMP
  - E.g. funding, personnel, time,
- Bureaucracy and Politics
- Access to Information
- An ISWMP should be a "living" plan that will be revised periodically
  - May not be necessary or possible to cover everything
- Case Study

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# ISWMP Development Timeline

- Timeline (start, end)
  - Pre-Planning
  - Information Gathering
  - Drafting → First Draft
  - Stakeholder Review → Finalize Draft
  - Submit for Approval → Obtain Approval
  - Periodically Review and Update
- What is driving this planning process?
  - Example driving forces:
    - The ISWMP grant funded for a specific period
    - Need to complete ISWMP asap to get GAP funding
- Case Study

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# ISWMP Planning Team

- **Who will be directly involved in developing the ISWMP?**
  - Who will gather information and draft the plan?
  - Who will determine the scope of the plan?
  - Who will decide the goals and priorities?
  - Who will identify and select waste management options?
- **Who else should be involved?**
  - What partners and stakeholders do you need information from?
  - Who do you want to review the plan and provide feedback?
  - Who will be approving the plan?
- **ACTIVITY**
  - Answer these questions in your groups
  - Report answers back to class

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# ISWMP Planning Team

- Those directly involved in ISWMP development
  - Scoping, Info Gathering, Drafting, Goal-Setting, Developing Strategies
  - Consider waste program administration and management (discussed later)
- Roles and Responsibilities
  - Project Lead
  - Support Team Member(s)
  - Strategy Decision-Maker(s)
  - These may all be the same person
- Important to size team appropriately
  - Too Many: unclear roles, group-think, too slow
  - Too Few: too little buy-in, lack of info or resources
- Communication and accountability are essential

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# Partners & Stakeholders

- Partners and Stakeholders (not part of the core planning team)
  - Info Providers, Reviewers, Approvers, Implementers, etc.
  - Consider waste program administration and management (discussed later)
- Identify partners/stakeholders and establish connection
  - Notify of planning process early-on; Involve strategically
  - Communicate needs, roles, and expectations for involvement
    - Be clear on partner/stakeholder roles, especially with respect to decision-making
- Communicate regularly; Provide key updates; Answer questions
- What to do if a partner/stakeholder become non-responsive
  - Determine whether their involvement or information is essential
    - If yes →
      - First, seek to re-engage in planning process
      - If unsuccessful, seek to compel participation
    - If no → focus efforts elsewhere

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# ISWMP Planning Process

- Map out timeline/milestones and roles/responsibilities
  - Link specific roles to specific milestones with deadlines (be realistic)
- Determine when and how to involve partners and stakeholders
  - Determine who will be responsible for managing each partner/stakeholder
  - Insert this information into the ISWMP Planning Map
- Schedule regular ISWMP planning team meetings
  - Report progress in achieving milestones (to be done by everyone)
  - Evaluate progress and adjust map accordingly
    - Re-assign tasks, adjust timeline, etc.
- Case Study – Timeline, Planning Team, Process

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# Generating Buy-In

- Core Planning Team; Partners and Stakeholders
  - Focus mostly on Decision-makers, Approvers, and Implementers
- More buy-in → Easier approval → More success in implementation
- Involvement → Buy-In
- Communicate that this is living plan that can and will be changed
  - To reflect changed circumstances, options, strategies, etc. (as needed)
  - Can decrease concern that once a decision is made it is unchangeable
- Activity/Discussion:
  - What strategies have you use to generate buy-in on a project?
  - What are strategies may work for your ISWMP?

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# Information Gathering

- What information will you need to develop your ISWMP?
- Where can you get this information?
  - What documents?  What people?
- ACTIVITY
  - Answer these questions in your groups
  - Report answers back to class



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# Information Gathering

- **Types of Information**
  - E.g. plans, studies, data, reports, interviews, policies, procedures, bills, surveys, observations, prior ISWMPs quantitative, qualitative, etc.
- **Location of Information**
- **Internal v. External**
  - Internal info – is already in the planning team's possession
  - External info – is in some else's possession (will require an info request)
- **Existing v. New Information**
  - Existing info – available in a usable form, just needs to be retrieved
  - New info – does not currently exist and/or is not in a usable form
    - May need to conduct a new analysis, calculation, study, etc.
    - Consider necessity and available resources for gathering



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# Information Gathering

- Keep track of your information gathered and requested
  - Name and brief description of information
  - Date received and/or requested
  - Location of information
  - Status of information (requested, received, reviewed)
- Use an information gathering document
- Example / Case Study



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# ISWMP Structure / Template



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# Thank You!
# Questions?

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**Tribal Waste and Response Assistance Program (TWRAP)**

# Developing and Implementing a Tribal Integrated Solid Waste Management Plan

**April 12-14, 2016**
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## SESSION 3:

# COMMUNITY SERVICE AREA

**Roberta Tohannie, ITEP**

# DEVELOP A PROFILE OF THE SERVICE AREA

**The goal is to gather as much information of the tribe and/or community to:**

- Estimate or determine the present and future waste stream
- Site waste handling facilities
- Identify transportation routes and distances to potential facilities and disposal sites
- Assess specific economic needs and to predict particular solid waste needs of industrial generators

# DEVELOP A PROFILE OF THE SERVICE AREA

- **Key considerations**
  - Population and Demographics
  - Community Assets and Resources
  - Households and Housing
  - Population Projections and Estimated Growth Rate
  - Economy
  - Climate
  - Geography and Land Use
  - Geology and Natural Resources
- **Understanding these factors is critical to prepare the plan and inform readers of needs**
- **It also provides background information you will need to answer various questions that will come up as you are identifying potential alternatives and waste management options for your community.**

# POPULATION AND DEMOGRAPHICS

**Establish the number of people to be served by the solid waste program. Use these resources to determine population and demographics:**

- BIA Population and Labor Force Report
- U.S. Census Bureau: factfinder.census.gov/

**Census Year 2000 Demographic Profile Highlights**

**Go to the website and visit the following links:**

- Population Menu (left), click, “Population Finder,” enter city/state, and click “Fact Sheet.”

# POPULATION AND DEMOGRAPHICS

**What is the projected population growth of your service area?**

- http://www.census.gov/population/www/projections/popproj.html
- http://www.census.gov/popest/counties/asrh/CC-EST2009-alldata.html

**Off reservation populations**

- Effects of tourists
- Community members working and shopping off reservation

# POPULATION AND DEMOGRAPHICS

## Understanding your demographics

- Age groups
  - Differing attitudes to waste issues?
  - Different access issues?
- Income, employment, education
- Tribal membership status
- Number of visitors – seasonal fluctuations?

## Consider populations in relation to land ownership issues you may have to deal with

# POPULATION AND DEMOGRAPHICS

**What if this information does not exist on any government or public document? What sources can provide you useful data?**

- If eligible to do so, conduct a community survey/assessment
- Talk to knowledgeable community members
- Hire private consultant, graduate students, etc.
- Conduct field studies

**Consider the advantages and disadvantages of these activities to determine population and demographics**

# COMMUNITY ASSETS AND RESOURCES

**Identify key factors that could assist with increasing awareness, pride, and community involvement in maintaining a successful SWM program:**

- Educational partners
- Culture and history
- Social programs
- Tribal Leadership/Governance

# COMMUNITY ASSETS AND RESOURCES

## Educational Partners:

- Schools, parent-teacher groups, tribal colleges, etc.
- Cultural centers, museums, senior centers, etc.
- Businesses, NGOs, non-profit groups, etc.

## Culture and History:

- Dates of existence and ancestral land locations
- What languages are spoken?
- What groups (Native and non-Native) live within the tribe's boundaries or community?

# COMMUNITY ASSETS AND RESOURCES

## Social and Relevant Tribal Programs:

- Health centers
- Utility authorities
- Law enforcement, court systems, etc.
- Emergency response

## Tribal Leadership/Governance:

- Tribal or IRA (Indian Reorganization Act) council
- Describe their council responsibilities and authority
- Describe length of terms

# HOUSEHOLDS AND HOUSING

**Housing types and locations will guide decisions on collection methods, fee structures, revenue projections, and source reduction activities.**

- Is housing clustered in certain communities or widely spaced?
- How much housing is single family versus multi-family?
- How many are owned versus rented?
- How many are occupied versus vacant?

**Will building projects affect your solid waste program?**

**Specific information about housing clusters and households can be found on the U.S. Census Bureau, tribal housing office, tribal planning office, and HUD.**

# POPULATION PROJECTIONS AND ESTIMATED GROWTH

## A possible formula to calculate growth rate or percent change:

*Percent change*: (value at end of period – value at beginning of period)/value at beginning of period * 100
*Percent change*: (Vpresent-Vpast/Vpast x 100
*Vpresent* = present or future value, Vpast = past or present value

**Example: A city has a population of 800,000 in 1990 and a population of 1,500,000 in 2008. To find the growth rate of the population in this city, do the following:**

*Growth rate* = (1,500,000 – 800,000/800,000 x 100 = 87.5%
To calculate annual percentage rate of change, divide the change by N (it represents the number of years between the two values.
*Average annual growth rate of this city* = 87.5%/2008-1990
*Average annual growth rate* = 87.5%/18 years = 4.86%

# ECONOMY

**Employment/unemployment rates and other demographic data**

- Available through the US Census Bureau and tribal offices

**Predominate businesses and industries**

- What are the needs of these waste generators?
- What expansion is anticipated?
- Source of revenue to the tribe/community

**Specify how some SW activities contribute to the local economy, such as full-time employment and income generated from non-Tribal sources**

# CLIMATE

**Climate/Weather: average seasonal temperatures, wind patterns, precipitation (both rain and snow), storm events (usually in 100 year form) needed to be factored in to solid waste planning**

- **Rainfall patterns can effect siting plans for transfer stations and landfills, road access, and moisture content of waste**
- **Wind patterns effect blowing trash, damage facilities, and cause erosion**
- **Plan for 10- or 100-year storm events**
- **Access to transfer stations seriously effected by weather events**
- **www.weather.gov**

# GEOGRAPHY AND LAND USE

## Geography:

- **Rivers, canyons, washes, vegetation type, elevations and other geographical features all effect solid waste planning**
  - **Using GIS technology, historical maps and aerial photography for planning and management**
  - **Road systems and public access can be effected by geographical features**

# GEOGRAPHY AND LAND USE

## Land Use:

- **Traditional use**
- **Subsistence Areas**
- **Archeological concerns**
  - Tribal historic preservation office (THPO)
  - State historic preservation office (SHPO)
  - NAGPRA (http://www.nps.gov/history/nagpra/)
  - National Register of Historic Places (http://www.nps.gov/index.htm)

- **Agricultural Concerns**
  - National Agricultural Statistics Service (http://www.nass.usda.gov/)

# GEOLOGY AND NATURAL RESOURCES

- **United States Geological Survey (http://www.usgs.gov/)**
- **Natural Resources Conservation Service and state agencies also maintain geologic databases**

Soil types, moisture variations, aquifers, seismic hazards, permeability of rock formations and previous mining activities all effect solid waste planning

- landfill siting (e.g. leachate concerns)
- closure of existing dumps

# OTHER CONSIDERATIONS

- List all sources you used to gather information about your community; include names of individuals, agency staff, and reports that you have used or obtained information from for your plan.
- Attach a map of your community or service area
- Refer to your Environmental Inventory (part of your GAP)
- U.S EPA American Indian Environmental Office/American Indian Tribal Portal Maps and Data
  (http://www.epa.gov/tribal/datamaps/index.htm)
- U.S. EPA Databases and Software
  (http://www.epa.gov/epahome/data.html)

*Any questions?*

# SESSION #4:
# Program Administration, Partnerships, Laws and Enforcement


**PRESENTED BY:**

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**April 12, 2016**

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# Program Administration

- Who is responsible for the following regarding waste program(s)?
  - Decision-Making
  - Program Management (day-to-day)
  - Program Implementation
  - Education & Outreach
  - Administrative & Financial Management
  - Data & Information Management
  - Compliance & Enforcement
- ACTIVITY
  - Answer these questions in your groups
  - Report answers back to class

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# Current Program Administration Agencies and Entities

- Describe current responsible agency(ies) and entity(ies)
  - Include a description of the functions of each agency and entity
- This may include one or more of the following:
  - Agencies, Committees, Boards, Utility Authorities, Departments
- Single v. Multiple Responsible Agencies
  - Multiple agencies from same tribe, different tribes, and/or non-tribal govts
- Constitutional v. Non-Constitutional Tribes



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# Current Program Administration Position Roles and Responsibilities

- Describe current waste program roles and responsibilities
  - Include a description of the functions of each position
    - Can include / develop job descriptions for waste management personnel
- Decision-Makers – determine laws, policies, strategies, staffing, budget, agreements/contracts, services, major purchases, etc.
  - Tribal Examples: Tribal Council members, Utility/Environmental Board, members, Tribal Administrator, Environmental Director
    - Can involve layers of authority
- Program Management – oversee day-to-day program operations
  - Examples: Environmental Director, Program Managers, Specialists
    - Can involve layers of authority

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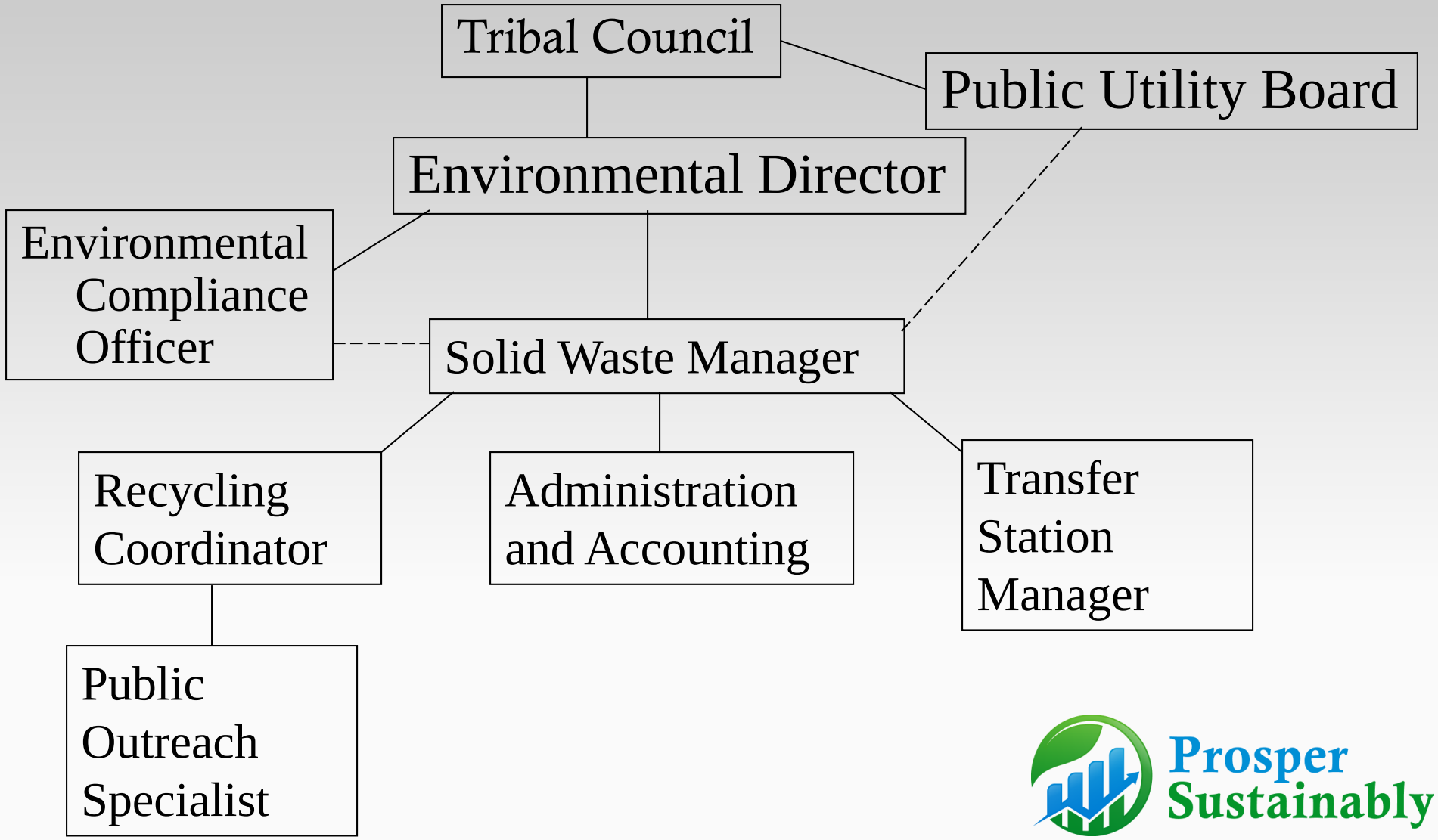
# Example Organization Chart

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# Current Program Administration Position Roles & Responsibilities

- **Program Implementers – implement daily program operations**
  - Examples: Program Managers, Specialists, Technicians, Operators
- **Education & Outreach – communicates with public**
  - Examples: Program Managers, Specialists, Coordinators
- **Administrative & Financial Management – manages finances, etc.**
  - Examples: Financial Officer, Administrative Assistant
  - Manages costs and revenues, grants, accounting, financial reporting, etc.
- **Data & Information Management**
  - Examples: Program Managers, Specialists, Technicians
- **Compliance & Enforcement of Waste Laws**
  - Examples: Compliance Officer, Law Enforcement, Managers, Specialists

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# Current Program Administration

- What are your current waste program gaps, deficiencies, needs?
  - Focus on entities, positions, expertise, training, certification, etc.
- ACTIVITY
  - Answer this question in your groups
  - Report answers back to class
- ISWMP Drafting Recommendation:
  - Draft section focusing on overall program administration
  - Address specific responsibilities under current conditions and practices
- Case Study

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# Future Program Administration

- Identify and describe future waste program administration options
  - Options for agency, entity, and position functions and responsibilities
  - Focus on addressing previously identified gaps, needs, and deficiencies
- Select options; Describe how program administration will evolve
  - What will the agency, entity, and position functions and responsibilities look like in the future? How will you get there?
- Prepare after drafting all of the current conditions and practices
  - Include under section focused on waste management options and strategy

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# Waste Laws and Enforcement



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# Terminology

This is how the following words will be used during this session:

- Law = Code, Ordinance, Statute, Regulation
- Code = A Series of Laws
- Statute / Ordinance = Law Adopted by a Legislative Body
  - E.g. A law adopted by the Tribal Council (if they have that authority)
- Regulation = Rules Adopted Under an Ordinance or Statute
  - Must be consistent with the Ordinance/Statute
  - May cover gaps or provide more detailed requirements

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# Federal Waste Laws

- Adopted by Federal Government
- Apply on Tribal Lands
  - May apply differently on than on State or Federal lands
- In general, administered and enforced by Federal agencies (USEPA)
- Enforced in Federal Courts
- Resource Conversation and Recovery Act (RCRA) is primary law
  - RCRA passed by Congress
    - Subtitle C – Hazardous Waste Program
    - Subtitle D – Solid Waste Program
    - Subtitle I – Underground Storage Tank Program
  - RCRA regulations passed by EPA

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# RCRA

- Under RCRA, Tribes are defined as "municipalities"
  - No Treatment as State (TAS) authorities available
- Federal Agencies have limited enforcement power
  - Virtually none over solid waste issues
  - May have enforcement authority over hazardous waste issues when they "present an imminent and substantial endangerment to health or the environment"



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# Tribal Waste Laws

- **Adopted by Tribal Government pursuant to governing document(s)**
  - Tribal laws are unique to each Tribe
- **Applies to "Indians" on tribal lands w/in Tribe's jurisdiction**
  - May also apply to "non-Indians" on lands w/in exterior boundaries
    - See "Montana test" (*Montana v. U.S.*, 450 U.S. 544 (1981))
  - No criminal jurisdiction over non-Indians
- **Typically Enforced in "Tribal Court"**
  - Alternatively, may be enforced by Tribal Council or General Council
- **Many Tribes have waste laws that are not being enforced**
- **Waste issues can be addressed under other laws**
  - E.g. Air Law (open burning); Water Law (runoff)



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# Montana Test

**A tribe retains inherent sovereignty to regulate:**

**1. "the activities of nonmembers who enter consensual relationships with the tribe or its members, through commercial dealings, contracts, leases, or other arrangements," and**

**2. nonmember "conduct . . . that threatens or has some direct effect on the political integrity, the economic security, or the health or welfare of the tribe." 450 U.S. at 565-66.**

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# State Waste Laws

- Adopted by State Government
- Enforced in State Courts
- Typically do not apply on Tribal Lands
- Exceptions:
  - Congress authorizes (e.g. P.L. 280)
  - Tribal-State agreement
  - Tribal adoption of state laws (adoption by reference)
    - This is technically tribal law



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# Compliance & Enforcement

- Tribe is responsible for compliance / enforcement of tribal laws
- EPA is responsible for compliance / enforcement of federal laws
  - Tribe can assume some compliance and enforcement responsibilities
    - Subject to EPA approval; E.g. UST inspections (compliance)
  - Tribes can report violations of Federal environmental laws to the EPA
- Implementation of Tribal Waste Laws
  - Compliance: Inspections, Permitting, Monitoring, etc.
  - Enforcement: Violations, Enforcement Orders, Hearings, Penalties, etc.
  - Consider available and needed personnel, resources, training, etc.
  - Identify enforcement/compliance policies, procedures, and forms

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# Current Waste Laws, Enforcement, and Compliance

- Describe current waste laws, enforcement, compliance in ISWMP
  - Tribal, Federal, and State Laws – describe applicability of each
  - Identify gaps, needs, and deficiencies in laws, enforcement, compliance
- Does your tribe have laws that address waste program issues?
  - If you don't know, how can you find out?
- Is your tribe enforcing its waste laws?
  - Which provisions are being enforced and which are not?
  - Who is enforcing them and how? What are the policies and procedures?
  - If you don't know, how can you find out?
- ACTIVITY
  - Answer this question in your groups
  - Report answers back to class



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# Future Tribal Waste Laws, Enforcement, and Compliance

- **Identify and describe waste law, enforcement, compliance options**
  - Focus on addressing previously identified gaps, needs, and deficiencies
- **Select options; Describe how regulatory systems will evolve**
  - Waste laws should address issues identified in ISWMP
  - Tribal Law Options
    - Waste Code (broader) v. Ordinance (narrower)
  - Enforcement & Compliance Options
    - Personnel; Funding; Training; Policies, Procedures, and Forms; etc.
- **Prepare after current waste program conditions and practices**
  - Include under section focused on waste management options and strategy

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# Tribal Waste Law Development Steps

- Scoping
  - Identify Issues and Objectives to be Addressed
  - Identify and Consider Enforcement Options and Capabilities
  - Consider Available and Needed Tribal Resources
- Review Tribal Constitution and other governing documents
- Research and Review Similar Laws
- Draft or Revise Tribal Environmental Law
- Presentation & Review
  - Including Tribal Council and Legal Review
  - May include public review (notice and comment process)
- Enact Tribal Environmental Law
- Implement Tribal Environmental Law

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# Tribal Waste Laws Example & Available Resources

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# Thank You!
# Questions?

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# SESSION 5: Current Waste Management Conditions & Practices

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**April 12, 2016**

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# Current Waste Streams & Generators

- What entities and activities are generating waste in the tribal community?
- What waste streams are being generated in the tribal community?
- ACTIVITY
  - Answer these questions in your groups
  - Report answers back to class



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# Types of Generators

- **Residential Buildings, Facilities, and Activities**
  - Homes, Home Improvements, Construction/Development of New Homes
- **Government Buildings, Facilities, and Activities**
  - Offices, Health Clinic, Events, Public Facilities, Transportation
- **Commercial Buildings, Facilities, and Activities**
  - Gas Stations, Casino Resort, Stores, Restaurants, Tourism
- **Industrial Buildings, Facilities, and Activities**
  - Energy Generation, Manufacturing, WWTP, Mining, Materials Processing
- **Agricultural Buildings, Facilities, and Activities**
  - Farming, Ranching

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# Non-Hazardous Waste Streams

- Glass
- Metals (aluminum, steel, etc.)
- Hard Plastics
- Soft plastics (e.g. plastic bags)
- Paper and Cardboard
- Corrugated Cardboard
- Styrofoam
- Compostable Food Waste
- Green Waste / Yard Waste
- Used Cooking Oil
- General Refuse
- Bulk Waste
- Reusable Items
- Recyclable Items
- Comingled Recyclables
- Items with Redemption Value

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# Special & Hazardous Waste Streams

- Household Hazardous Waste
- Electronics Waste (E-Waste)
- Construction & Demo Debris
- Contaminated C&D Waste
- Junk Automobiles
- Medical & Infectious Waste
  - Including Sharps
- Dead Humans and Animals
- Animal Waste
- Septic and Sewage Sludge
- Universal Waste
- Ash / Hot Ash
- Used Motor Oil
- Industrial Waste
- Agricultural Waste
- RCRA Hazardous Waste
- Non-RCRA Hazardous Waste

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# Generation Rates

- Quantifying waste stream generation rates – options?
- Waste Stream Characterization / Assessment
  - Can be conducted in-house or contracted out
  - May be offered by waste services provider(s)
- Obtaining and analyzing waste management bills
- Transportation invoices / data
- Tipping fee receipts / invoices
- Other past records, data, and reports
- Available waste management statistics

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# Calculating Generation Rates

## EXAMPLES

- **Residential Sector**
  - Amount of waste generated / Number of homes = Generation Rate
  - Amount of waste generated / Number of residents = Generation Rate
- **Office Buildings / Businesses (no or limited onsite customers)**
  - Amount of waste generated / Number of employees = Generation Rate
- **Onsite Service Businesses (e.g. hospitality)**
  - Amount of waste generated / Number of customers = Generation Rate
- **Use a consistent timeframe (e.g. daily, monthly, or annually)**

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# Current Waste Management Practices

- How is every identified waste stream being managed?
  - Consider each generator since this may vary from generator to generator
- Waste management practices include generation, storage, collection, disposal, processing, transportation, reuse, recycling, conversion, source reduction, etc.
- ACTIVITY
  - Answer this questions in your groups
  - Report answers back to class



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# Current Waste Management Practices

- **How is every identified waste stream being managed?**
  - Consider each generator since this may vary from generator to generator

- Household Hazardous Waste
- Electronics Waste (E-Waste)
- Construction & Demo Debris
- Contaminated C&D Waste
- Junk Automobiles
- Medical & Infectious Waste
  - Including Sharps
- Dead Humans and Animals
- Animal Waste
- Septic and Sewage Sludge
- Universal Waste
- Ash / Hot Ash
- Used Motor Oil
- Industrial Waste
- Agricultural Waste
- RCRA Hazardous Waste
- Non-RCRA Hazardous Waste

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# Current Waste Management Practices

- **How is every identified waste stream being managed?**
  - Consider each generator since this may vary from generator to generator

- Glass
- Metals (aluminum, steel, etc.)
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- Soft plastics (e.g. plastic bags)
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- Corrugated Cardboard
- Styrofoam
- Compostable Food Waste
- Green Waste / Yard Waste
- Used Cooking Oil
- General Refuse
- Bulk Waste
- Reusable Items
- Recyclable Items
- Comingled Recyclables
- Items with Redemption Value

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# Current Waste Management Practices

**Describe how each waste stream is being managed from cradle to grave**

- Generation
- Storage (onsite, intermediate)
- Collection
- Transportation
- Disposal
- Processing
- Recycling
- Reuse / Repurpose
- Source Reduction
- Waste to Energy
  - Burning, Incineration
- Composting
- Chipping and Shredding
- Facilities and Landfills

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# Current Waste Management Practices

- Describe who is managing each waste stream (in addition to how)
  - Tribal Agencies and Staff Members
  - Contractors, Service Providers
  - Non-Tribal Agencies
  - (In addition to how)
    - Practices, Facilities, Equipment, Vehicles, etc.
- Describe where the waste streams are being managed
- Prepare a list of facilities, landfills, and service providers
  - Include contact information, location/distance, hours of operation, website
    - This is useful as an Appendix
- Describe other current partners and resources

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# Current Waste Management Practices Illegal Dumps and Uncontrolled Wastes

- Not all waste management practices are legal or desirable
- Dumpsites can be open or closed, legal or illegal
- Open, illegal dumpsites are a common problem for Tribes
- Include inventory and assessments for all dumpsites (if available)
  - If not available, include conducting inventory and assessments in ISWMP
  - Request waste site assessment forms from the EPA
  - To qualify for funding and assistance (if available):
    - Report dumps to EPA and add to IHS database (https://wstars.ihs.gov/)
- Other issues: littering, roadside dumping, open burning, etc.

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# Current Waste Management Conditions

- Describe environmental conditions linked to wastes (if applicable)
  - This information can be quantitative or qualitative
  - To the extent that this information is not covered already
- Examples
  - Soil contamination data and analysis
  - Water pollution data and analysis
  - Air quality data and analysis
  - Human health impacts
  - Wildlife and habitat impairments
  - Pictures, complaints, smells



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# Current Waste Management Costs, Revenue, and Funding

- How much does the current waste management practices cost?
- Is any revenue being generated? If so, how much?
- How are the waste management practices being funded?
- Are there any concerns regarding costs, revenues, funding?
- ACTIVITY
  - Answer this questions in your groups
  - Report answers back to class



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# Current Costs, Revenue, Funding

- **Identify/describe tribal costs for managing each waste stream**
  - Facilities, vehicles, equipment, and supplies
  - Personnel costs – wages, benefits, training
    - Consider all activities: Operations, compliance, enforcement, outreach, oversight, etc.
  - Waste service provider fees (collection, transportation, tipping)
  - Administrative and overhead expenses
- **Identify/describe tribal revenue for managing each waste stream**
  - Taxes or fees collected for services provided (if applicable)
  - Fees or penalties collected for compliance/violations (if applicable)
- **Describe tribal or grant funding sources and amounts**

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# Current Costs, Revenue, Funding

- Sources of financial information:
  - Bills, receipts, budgets, financial statements/reports, grant applications, accounting department, fee schedules, waste generation/collection rates
    - Some calculation may be required
- Show monthly or annual financials over the past few years
- Consider current bookkeeping practices



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# Current Waste Management Conditions and Practices

## FOR EVERY WASTE STREAM:

- Address current waste management practices
  - Include who, where, and how
- Address costs, revenue, and funding
- Identify and describe gaps, limitations, deficiencies, and needs
- Organize these by waste stream and/or generator
  - By generator if same waste stream is managed differently by generators
- This section is one of the most important parts of your ISWMP
  - Need to identify status of program to develop a strategy for moving forward

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# Thank You!
# Questions?

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# SESSION #6: Hands-On Waste Assessment Training Preparation


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**April 12, 2016**

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# Waste Characterization / Assessment

- Brief Background
- Introductory videos:
  - https://www.youtube.com/watch?v=My694wou914
  - https://www.youtube.com/watch?v=OyICoDPPt58
- Purpose
  - Understand the composition of your waste streams
    - Categorize waste streams; Determine weight and volume
  - Identify opportunities to improve waste management
    - Strategies and practices, enforcement and compliance, education & outreach, etc.
- Limitations
  - Only provides a snapshot unless done regularly
  - Messy!!!  May require significant manpower



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# Waste Assessment Planning

- **Identify and select waste streams**
  - The waste streams should be carefully considered ahead of time
  - Identify waste management issues and opportunities beforehand
- **Select waste assessment date**
  - Timing is very important; Want to assess the most representative sample
- **Recruit sorting team**
  - Try to recruit volunteers, especially generators and influencers
  - Turn it into an educational activity (communicate issues/opportunities)
- **Identify and secure supplies**
  - Examples Supplies List – Santa Rosa Cahuilla

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# Waste Assessment Planning

- Prepare data collection forms
  - These must correspond to target waste stream categories
  - Example – Santa Rosa Cahuilla
- Develop health & safety plan
  - Example – Santa Rosa Cahuilla
- Prepare sorting and data collection steps/protocol
- Inform sorting team of required attire and supplies
  - Provide sufficient advance notice

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# Waste Assessment Planning

- Label and weigh sorting bins / Prepare signage for sort stations
  - There must be a sorting station / bin for each waste stream
  - Example – Santa Rosa Cahuilla
- Conduct pre-event walkthrough at sort site
  - Go through the whole process, step by step
  - Identify and address issues and supply needs
  - This is an essential step; DO NOT SKIP!!!!
- Conduct pre-assessment orientation and training
  - Can be done immediately prior to the event
  - Go through waste sort steps, health and safety training
  - Also, use as an educational opportunity

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# Waste Assessment Planning

- Setup stations and supplies
  - Better to do before participants arrive
- Perform waste sort
  - Example – Santa Rosa Cahuilla
- Organize and analyze data
  - Calculate total weight and/or volume of each waste stream and all waste
  - Calculate percentage for total for each waste stream
- Incorporate data and analysis into ISWMP
  - Utilize data in evaluating waste management strategies

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# Waste Assessment Roles

- Coordinator – arranges and manages event
- Lead Sorter(s) – lead sorting efforts for larger groups
- Sorters – majority of crew that separates and weights waste
- Data Collector(s)
  - One person to read scale; One person to record data (per scale)
- Hazwoper Specialist (40-hour hazwoper trained)
  - Important to include for hazardous waste (unless minimal HHW)
- Health and Safety Specialist
  - Good to have but not absolutely necessary; Try to recruit a first responder

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# Waste Sort Steps

- Put on personal protective equipment (PPE)
  - Appropriate clothing, glasses, gloves, hats, and sunblock
- Remove waste from dumpsters and place in a central location
- Open bags and spread out waste
- Sort waste into appropriate bins (at corresponding station)
- Weigh waste bin on scale
- Record weight in appropriate place on data sheet
  - Dump waste back into dumpster
- Cleanup Site



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# Potential Hazards

- **Physical hazards**
  - Cuts and punctures; bending and lifting
- **Airborne contaminants**
  - Dust
- **Chemical hazards**
  - HHW, chemical spills and containers
- **Biological hazards**
  - Medical wastes, sharps, bloody objects, pet waste
- **Geographic hazards**
  - Altitude and sun exposure (wear hats and sunblock!!); dehydration
- **If you have physical limitations, see me after class**



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# Required PPE & Clothing

**PPE = Personal Protective Equipment**

- Safety glasses (sunglasses are acceptable)
- Long-sleeved shirt
- Long pants
- Sturdy boots
- Sturdy work gloves
- A change of clothes and shoes (recommended)
  - Bring plastic bag for dirty clothes
- Sun protection (hats and sunblock)

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# Thank You!
# Questions?

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# SESSION 7: Future Waste Management Conditions & Practices

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**April 13, 2016**

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# Long-Terms Goals

- What are the long-term waste management priorities and goals?
  - Long-term goals identified by the tribal community and leadership?
  - Long-term goals identified by the Environmental Department?
  - Long-term goals identified by the stakeholders?
- ACTIVITY
  - Answer these questions in your groups
  - Report answers back to class

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# Goals v. Objectives v. Priorities

## Long-Term Goals v. Intermediate Objectives/Milestones

- **Goals – A Significant Aim or Desired Result**
  - Doesn't have to be achievable within ISWMP timeframe
  - Examples:
    - Achieve zero waste
    - Operate a financial self-sufficient transfer station
- **Objectives – What Must be Done to Achieve a Goal (progress)**
  - Major Steps / Activities (or sub-goals)
    - A series of smaller steps/activities/tasks may be required to achieve an objective
  - SMART – Specific, Measureable, Achievable, Relevant, Time-based
  - Examples:
    - Prepare a ISWMP; Conduct a transfer station feasibility study; Cleanup/close dumpsites
- **Priorities – Objectives of greater importance**
  - Due to impact, timing, need, goals, direction, etc.

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# Sample Long-Term Goals

- Effectively Address Waste Management Gaps
- Evaluate, Optimize, and Maintain Waste Management Systems
- Maintain Financial Stability & Maximize Cost-Effectiveness
- Protect Human Health and the Environment
- Maximize Materials Reduction, Recovery, and Diversion
- Maintain and Increase Employment of Qualified Personnel
- Maximize Community Awareness, Involvement, and Positive Behavior
- Eliminate/prevent illegal dumping throughout and near tribal lands
- Operate financially self-sufficient waste collection and/or disposal services
- Strengthen tribal sovereignty and self-governance
- Effectively regulate solid waste management and issues

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# Long-Term Goals & Priorities

- Goals inform waste management priorities
  - Use goals to prioritize which objectives to pursue and when
- Identify and describe long-term waste management goals
  - Include as a separate ISWMP section



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# Future Generators, Waste Streams, Generation Rates, and Practices

- How will waste generators change?
- How will the types of waste streams change?
- How will the rates of waste generation change?
  - How can you project these changes?
- ACTIVITY
  - Answer this questions in your groups
  - Report answers back to class

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# Future Generators and Waste Streams

- Review existing generators and waste streams
- Will there be any new generators or waste streams?
  - Are any new businesses, developments, or construction projects planned?
    - Ask Tribal leaders; planning, business, and project management personnel
    - Review strategic plans, land use plans, and other planning documents
- Will any existing generators or waste streams cease to exist
  - Are facilities, businesses, buildings, operations, or activities going to be shut down? Do any of these have a clear end of life?
    - Ask Tribal leaders; planning, business, and project management personnel
    - Review strategic plans, land use plans, and other planning documents

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# Future Waste Generation Rates

- Will the quantities of waste generated change (per waste stream)?
- Factors to consider:
  - Population growth (or shrinkage)
  - New businesses, construction, development (and/or closures)
  - New residential development (or abandonment)
  - Employee or customer growth (or decline)
- Calculating changes to existing waste streams
  - Examples:
    - Current Residential Generation Rate * (Projected Population / Current Population)
    - Current Service Business Generation Rate * (Projected Guests / Current Guests)

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# Future Waste Management Practices Identifying Options

- For each and every waste stream (and generator, if same waste streams are managed differently):
  - Identify / describe feasible options for managing the existing waste stream
    - Feasible means that it can be done and is an option worth considering
    - Be sure to include and consider current practices as an option (business as usual)
  - Identify / describe feasible options for managing new waste streams
- For all other waste management issues (e.g. illegal dumpsites):
  - Identify / describe feasible options for managing the issue
- Address full life cycle of waste stream for each option
  - Source reduction, generation, storage, transportation, processing, conversion, reuse, recycling, disposal, etc.

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# Future Waste Management Practices

- What are your options for managing your waste streams?
  - Source reduction, generation, storage, collection, transportation, processing, conversion, reuse, recycling, disposal, etc. (cradle to grave)

- Glass
- Metals (aluminum, steel, etc.)
- Hard Plastics
- Soft plastics (e.g. plastic bags)
- Paper and Cardboard
- Corrugated Cardboard
- Styrofoam
- Compostable Food Waste
- Green Waste / Yard Waste
- Used Cooking Oil
- General Refuse
- Bulk Waste
- Reusable Items
- Recyclable Items
- Comingled Recyclables
- Items with Redemption Value

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# Future Waste Management Practices

- **What are your options for managing your waste streams?**
  - Source reduction, generation, storage, collection, transportation, processing, conversion, reuse, recycling, disposal, etc. (cradle to grave)

- Household Hazardous Waste
- Electronics Waste (E-Waste)
- Construction & Demo Debris
- Contaminated C&D Waste
- Junk Automobiles
- Medical & Infectious Waste
  - Including Sharps
- Dead Humans and Animals
- Animal Waste
- Septic and Sewage Sludge
- Universal Waste
- Ash / Hot Ash
- Used Motor Oil
- Industrial Waste
- Agricultural Waste
- RCRA Hazardous Waste
- Non-RCRA Hazardous Waste

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# Future Waste Management Practices Identifying Options

- Calculate costs and revenue streams for each option
- Describe funding requirements and sources for each option
- Describe changes to program administration for each option*
- Describe changes to program implementation for each option*
  - Include changes to personnel, service providers, partners, etc.
- Describe regulatory changes for each option*
  - Include changes in laws, compliance, and enforcement
- Describe education & outreach strategies for each option*
- Describe other important changes for each option*

*Only address if applicable

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# Future Waste Management Practices Identifying Options

- Projecting costs and revenue projected generation rate changes
  - Projected generation rate * Projected cost (account for likely inflation)
    - Show annual changes
- Calculation potential costs and revenue for new practices
  - This may require preparing a feasibility study or business plan
- Gathering additional information is always an option
  - E.g. composting is an option but need more info → feasibility study



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# Future Waste Management Practices Evaluating and Selecting Options

- Evaluate and select best option(s) for each waste stream/issue
  - Consider long-term goals and identified priorities
  - Consider costs, revenue, funding, personnel, etc.
  - Consider potential positive and negative outcomes
- You may want to or need to involve higher level decision-makers
- Multiple options may be selected for a waste stream/issue
  - E.g. Continuing with same practices while conducting a feasibility study
- Selection of options may involve prioritizing
  - Pursuing one option may limit ability to pursue another
  - Consider spreading out timing of selected options
    - Listing out in a draft action plan can be helpful in ordering

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# Future Waste Management Practices Evaluating and Selecting Options

## EXAMPLE – Residential Waste Management

- Option #1 – Continue offering free dumpsters at central location (utilizing a non-tribal service provider)
- Option #2 – Discontinue dumpsters and offer free curbside collection service (utilizing a non-tribal service provider)
- Option #3 – Discontinue dumpsters and notify residents of curbside collection and self-haul options (at resident's expense)
- Option #4 – Discontinue dumpsters and require participation in curbside collection service (at resident's expense)

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# Future Waste Management Practices Evaluating and Selecting Options

## EXAMPLE – Compostable Food Waste

- Option #1 – Continue disposing of in dumpsters which is picked up by non-tribal waste services provider and disposed at landfill
- Option #2 – Source separate food waste at tribal offices, purchase small composter to compost onsite, utilize compost as fertilizer
- Option #3 – Purchase separate bin and composter for residential food waste to compost onsite, utilize compost as fertilizer
- Option #4 – Develop and offer tribal residential food waste collection service, purchase composter, compost onsite…

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# Future Waste Management Practices Evaluating and Selecting Options

## EXAMPLE – Household Hazardous Waste

- Option #1 – Notify residents of free HHW collection events held at nearby transfer stations
- Option #2 – Notify residents of free HHW collection events held at nearby transfer stations AND collect HHW immediately prior to events and transport on behalf of residents
- Option #3 – Accept HHW on an ongoing basis at the Tribal Offices, store in waste collection area, transport HHW to nearby transfer station during free HHW collection events

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# Future Waste Management Administration, Laws, Outreach

- Considering including standalone sections summarizing:
  - Future Waste Program Administration
  - Future Waste Laws, Enforcement, and Compliance
  - Future Public Education & Outreach
- This will be helpful if the changes will be significant
  - Otherwise, these can be addressed under future waste management practices focusing on relevant waste streams and issues
    - E.g. if the only regulatory change will be to develop a law and enforcement program addressing open burning, you can choose to just address this under the future waste management practices subsection focused on open burning



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# Future Waste Management Practices Funding Options

- **Federal Grants**
  - EPA: GAP Grant (incl. supplemental funding), Hazardous Waste Grant, CWA 319 Grant (link to NPS), Brownfields Grant
  - IHS: Sanitation Deficiency System funding
  - ANA: Environmental Regulatory Enhancement, SEEDS (link to training)
  - USBR, BIA, USDA, FWS, HUD CDBG, DOE
- **Foundation Grants**
  - National Fish & Wildlife Foundation (link to wildlife/habitat)
- **State Grants (varies from state to state)**
- **Tribal Funding – Ongoing General Funds, One-Time Allocations**
- **Program Revenue**
  - Tipping Fees, User Fees, Taxes
  - Application/Permit Fees, Penalties

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# Thank You!
# Questions?

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**INSTITUTE FOR TRIBAL ENVIRONMENTAL PROFESSIONALS**
**Tribal Waste and Response Assistance Program (TWRAP)**

# Developing and Implementing a Tribal Integrated Solid Waste Management Plan

**April 12-14, 2016**
**Palm Springs, CA**

## SESSION 8:

# PUBLIC OUTREACH STRATEGIES

**Roberta Tohannie, ITEP**

# OUTREACH PLAN

## Demonstrate Need For ISWMP

- To gain support for the plan will require the involvement of the stakeholders, i.e. planning team, community members, etc.
- Understand the role of culture in tribal solid waste management, i.e. legacy of open dumping.
- Consider that solid waste management is distinguished from other environmental/utility media because community behavior and habits are involved.
- Take into account about “education versus enforcement”

# OUTREACH PLAN

## Demonstrate Need For ISWMP

- Developing solutions to your community's solid waste problems requires public involvement.
- Public education creates community interest in how solid waste management decisions are made. It may have the added benefit of building community support for your program.
- These are important factors considering the uniqueness of tribal communities:
  - People
  - Land
  - Tribal programs
  - Authority

# OUTREACH PLAN
## Building Support For Your ISWMP

- Well-planned education and outreach activities can help generate understanding and support for waste management issues in your community. For example, they can be used to teach community members how to comply with waste management to the overall benefit of the tribe or community.
- Ineffective or half-hearted public education initiatives may confuse community members, reduce participation, or cause people to ignore it all. Successful approaches must be consistent and ongoing.
- Incorporate culture and traditional values when appropriate. This will help to deliver your messages more effectively and build trust amongst your audience.

# OUTREACH PLAN
## Establishing Goals

- Identifying specific goals will help you to develop a more focused and effective outreach plan. Choose goals that are achievable given your available resources, timeframes and other constraints.
- Your goals should define your target audience and help you to customize strategies and activities to meet situation-specific needs.
- Expand your efforts to include community members who are respected and will be listened to by other members.
- You also might need to direct your public education efforts to your staff responsible for implementing your program. This will help them to fully understand their role and convey your messages effectively.

# OUTREACH PLAN
## Establishing Goals

- The next step is to determine the best way to get your message out to your community members. Your messages are likely to have more impact if they are heard more than once.
- Partnerships and outreach activities complement one another and often open the door to new funding opportunities and an expanded resource base.
- Make sure you are realistic in developing your plan and in setting your goals. Be sure to keep in mind your resource constraints or other relevant factors
- Questions To Ask:
  1. What solid waste issues are people in groups identified most concerned about?
  2. To what extent are people already educated about solid waste and other environmental issues?
  3. Are community members responsive to newsletters, public notices, and other outreach methods?

# OUTREACH PLAN
## Establishing Goals

**What Else May You Want To Consider?**

- Public education and community outreach programs are never fully completed. Just because you conducted certain activities doesn't mean you are done promoting and educating community members.
- Anticipate that community members will likely have questions about new initiatives and policies that may not be completely addressed during initial public campaigns or outreach activities
- Most new or revised solid waste programs need to go through adjustment processes before they run smoothly. Make certain that your goals anticipate the new structure or revision.
- Establish a budget. For example, realize costs for:
  - Mailing notices, reports, etc.
  - Print jobs
  - Rental fees for meeting spaces or community events
  - Meals or refreshments for meetings or community events

# OUTREACH PLAN

## Establishing Goals – Timing of ISWMP Development

YEARLY FORECAST - Timelines and Deadlines

- Establish the date of your presentation for community meeting, tribal council, etc.
- Anticipate deadlines for grants and sponsorships
- Decide when to confirm your team and best days to meet
- Schedule follow-up, post activity discussions
- Start early in the process – planning and implementation take time

# OUTREACH PLAN
## Choose an Outreach Method

- As you are considering the many options for distributing your message, you will need to take your budget, availability of staff, and technical requirements into consideration when deciding on a method.
- Make certain your messages are concise, easy to understand, visual, and clearly visible.
- Consider the following:
  - ✓ Community Surveys
  - ✓ Fact Sheets and Newsletters
  - ✓ Flyers, Posters, Magnets
  - ✓ Signs, Billboards, Community Bulletins
  - ✓ Brochures, leaflets, card inserts
  - ✓ Press Releases and Public Service Announcements
  - ✓ Website, web page, Facebook, and Other Social Media Outlets
  - ✓ Radio, Television, Internet, Interviews

# OUTREACH PLAN
## Working With Public To Gain Support

### Provide "Press Kits" to the public

- To further increase the presence of the Plan, consider providing an outline or vision statement to certain groups who may play a major role in supporting your plan.

### Expect The Media To Approach Key Public Officials

- Make sure you keep key officials informed of the status of your Plan as they may be interviewed or expected to provide comments.

### Present Technical Information in Understandable Language

- If you do not take the time and effort to present technical information in simple, accessible language, everyday, understandable language it can increase suspicion and could lead to loss of credibility.

# OUTREACH PLAN

## Working With Public To Gain Support

### Do Not Be Afraid To Say "I Don't Know"

- Expect some challenging questions and inform the public you will reply with an answer soon; better to be right than wrong.

### Do Not Purposely Give Incorrect Information

- If your audience finds you have been deceitful and dishonest, then you could lose your support; elders do not like to be treated this way.

### Determine Meeting Type Or Style

- Workshops vs. Town halls
- Separate meetings with certain groups?

### Working With Your Staff

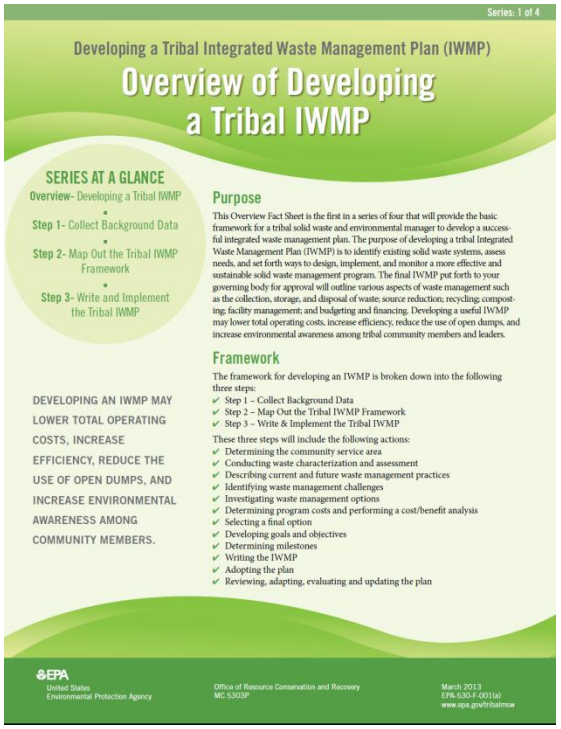
- Make sure your co-workers and volunteers are kept informed of any processes; they are your representatives and contacts; conduct mock meetings and participate in role-play.

# OUTREACH PLAN

## EPA Resources

EPA Tribal Solid Waste: https://www.epa.gov/tribal-lands


https://www.epa.gov/sites/production/files/2015-10/documents/twj-7_0.pdf




https://www.epa.gov/sites/production/files/2015-10/documents/epa_iwmp_factsheets_final_2.pdf

# QUESTIONS?

# CREDITS

- **Alaska Native Tribal Health Consortium**
  www.anthc.org
- **Tribal P2 (Pollution Prevention)**
  www.tribalp2.org/
- **National Resource Center**
  www.nationalserviceresources.org/service-activities/tribal-services
- **Agency for Toxic Substances and Disease Registry-Environmental Health Ed for Public**
  www.**atsdr.cdc.gov**
- **Learn and Serve America (AmeriCorps)**
  http://www.learnandserve.gov/for_organizations/indian_communities/index.asp
- **Solid Waste Alaska Network (S.W.AN.)**
  http://www.ccthita-swan.org/main/index.cfm

# SESSION 9: Waste Assessment Debrief


**PRESENTED BY:**

**Josh Simmons**
**Principal Consultant / Attorney / Collaborative Strategist**
**www.ProsperSustainably.com**


**April 14, 2016**

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# Waste Assessment Data Organizing, Integrating, Analyzing

- Calculate subtotals by waste stream and overall total
- Calculate waste stream percentages
  - Waste Stream Subtotal / All Waste Total
- Organize subtotals and overall total in table/spreadsheet
  - Optional – create and insert chart
- Insert table into ISWMP under current waste generation
  - Briefly describe waste characterization event (when, who, what)
- Include data as needed under current waste streams descriptions
- Utilize data to identify/analyze issues, opportunities, and options
  - Practices, laws, enforcement, E&O, administration, etc.

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# Waste Data Calculations & Analysis

- **Calculated Material Weight for each load (per waste stream)**
  - Material & Container Weight Combined – Empty Bin Weight
    - CRV Plastic Load #1 Example: 6.8. lbs – 3.6 lbs. = 3.2 lbs.
- **Total Material Weight (per waste stream)**
  - Sum of Calculated Material Weight (all loads per waste stream) = Subtotal
- **Total Material Weight (all waste streams)**
  - Sum Calculated Material Weight Subtotals = Total
- **Waste Stream Percentage (per waste stream)**
  - Subtotal / Overall Total x 100 = Percent of Total
- **Describe two new options/objectives you would consider**
  - If these were the results for your residential waste
  - Relating to practices, laws, E&O, administration, etc.

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# Thank You!
# Questions?

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# SESSION 10: ISWMP Drafting, Finalizing, Implementing, Revising

**PRESENTED BY:**

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**Principal Consultant / Attorney / Collaborative Strategist**
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**April 14, 2016**

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# Developing an Action Plan

- Insert selected options for future waste management into a list or table that includes (at minimum):
  - A brief description of the activity
  - The year in which the activity will be completed
  - The tribal person or entity responsible to the activity
- Additional useful information to include (optional) per activity:
  - Outputs, outcomes, and/or deliverables
  - Projected costs and revenue
  - Funding source(s)
  - All individual staff responsibilities and work years
  - GAP Guidance Capacity Indicator numbers

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# Developing an Action Plan
# Types of Activities to Include

- **Future Waste Management Practices (per waste stream / issue)**
  - Continued activities – where the practice will remain the same
    - E.g. Continuing to use the same waste collector for residential waste
  - New activities – where a new practice is selected
    - E.g. Start collecting food and green waste to convert to compost and mulch
  - Ongoing activities
    - E.g. Operate existing tribal transfer station
- **Future Development / Revision of Waste Laws**
  - E.g. Developing/revising a comprehensive waste ordinance
  - E.g. Developing/revising a law addressing junk automobiles

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# Developing an Action Plan
# Types of Activities to Include

- **Future Waste Laws Compliance and Enforcement**
  - E.g. Develop or manage an open burning permit program
  - E.g. Conduct enforcement actions for illegal dumping
- **Future Education & Outreach**
  - E.g. Host an annual Earth Day cleanup event
  - E.g. Publish quarterly articles on waste management issues and opportunities for tribal newsletter and website
- **Future Program Administration**
  - E.g. Obtain approval for a new Transfer Station Manager position
  - E.g. Prepare and implement procedures to track and report curbside waste collection fees per customer to Financial Department

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# Developing an Action Plan
# Types of Activities to Include

- **Gathering additional information**
  - E.g. Preparing a feasibility study
- **Pursuing and securing funding**
  - E.g. Applying for GAP supplemental funding for a waste site cleanup
- **Developing new partnerships; Strengthening existing relationships;**
  - E.g. Partnering with the County on enforcement of waste laws



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# Developing an Action Plan

- Add selected options to action plan table, list, or spreadsheet
  - Also add options that haven't been selected but are still being considered
  - State these selected and possible options briefly as objectives
- Determine timeframe of action plan (recommendation 4-5 years)
  - Develop a living and perpetual plan that will always cover next 4-5 years
- Assign a year to each objective (aka selected option)
- For possible objectives, assign "possible" instead of a year
  - The goal is to keep these objectives on your radar (w/o commitment)
  - Consider during review periods for possible ISWMP incorporation

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# Developing an Action Plan

- Repeat objective for each and every year that it will occur
  - E.g. Operate tribal transfer station (for 2016, 2017, 2018, 2019…)
- Assign a primary responsibility for each objective
- Add other information to objectives as desired
  - E.g. outputs, outcomes, costs, funding, staff work years
- Review all objectives by year and make adjustments (if needed)
  - Do you have enough time and resources to pursue all objectives?
  - Do you have enough time and resources to pursue additional objectives?
  - This process will help you effectively prioritize over next 4-5 years
- Consider preparing as a stand-alone document

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# Utilizing an ISWMP Action Plan

- Communicate waste mgmt strategy w/ leadership & stakeholders
  - For buy-in, support, progress reporting, etc.
- Direct and manage staff, contractors, and other partners
  - Provides clear roadmap and promotes accountability
  - Use in regular meetings to review and evaluate status of objectives
- Prepare annual budgets and grant proposals / work plans
- Evaluate and address new issues, opportunities, circumstances
- Develop and update EPA-Tribal Environmental Plan (ETEP)

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# Updating an ISWMP Action Plan

- Review and update your ISWMP regularly (at least annually)
- Delete (or archive) completed objectives from past year
- Push back (or delete) uncompleted objectives from past year
- Consider adding new objectives and re-ordering later objectives
  - In response to new issues, opportunities, circumstances, priorities, goals
    - Later objectives can also be deleted that no longer are appropriate
- Consider integrating "possible" objectives
- Add year to end of plan and remove year that has passed
  - E.g. 2016 – 2020 → 2017 – 2021

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# Action Plan Examples



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# ETEP Purpose and Goals
## 2013 GAP Guidance

- Define mutual roles and responsibilities for program implementation
- Establish a joint EPA-tribal planning process to address tribal environmental priorities and ensure federal programs are fully implemented
- Identify tribal plans to manage authorized environmental programs
- Identify need for environmental programs assistance and resources
- Establish intermediate and long-term goals
- Track GAP progress against long-term goals
- Ensure linkage of GAP work plan tasks to long-term goals

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# ETEP Purpose and Goals
## 2013 GAP Guidance

- Improve alignment of GAP work plan activities with long-term goals and priorities
- Better position tribes and EPA to effectively build environmental program capacity through GAP
- Streamlined approach for a long-term planning tool that can be modified as needed
- Intended to be living, usable documents for both tribes and EPA as environmental partners to use in planning and guiding work
- ETEP = Strategic Planning Documents (Strategic Work Plan)

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# ETEP Requirements / Format

## 2013 GAP Guidance

- **Four (4) Required Components:**
  1. Identification of tribal environmental program priorities, including capacity building and program implementation goals
  2. Identification of EPA program priorities and management requirements
  3. Inventory of regulated entities
  4. Identification of mutual roles and responsibilities
- **ETEP development and format options are flexible**
  - Must address four (4) required components
  - Length, level of detail, and format will vary
    - "Maximum flexibility is provided as to how the ETEPs are developed"
- **Timeframe**
  - No more than 5 year timeframe is recommended by EPA
    - 4 year ETEP may be best to align with GAP funding cycles
    - May want to develop a living and continuous 4 year plan
- **ETEPs to be jointly reviewed at least annually and updated as needed**
  - Jointly reviewed by tribe and EPA (don't wait for EPA)

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# #1 - Tribal Program Priorities

**MAIN ELEMENTS REQUIRED:**

1. **Short description of priority**
   - **Recommendation: Use program areas as priorities**
2. **Tribe's long-term environmental program goals**
   - **That address or support priority / priority program area**
   - **GAP Work Plans must be aligned with ETEP-long-term goals**
3. **Intermediate program development milestones / objectives**
   - **To be accomplished with ETEP timeframe**
4. **Tribe's plans to manage authorized environmental programs**
   - **This means plans to assume authority(ies) to manage EPA regulatory programs**
     - **E.g. CAA or CWA TAS (each authority must be officially approved by the EPA)**
5. **Needed Assistance to achieve goals and milestones/objectives**
   - **E.g. training, technical assistance, EPA direct implementation actions, financial, etc.**

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# ISWMPs and ETEPs

- GAP funded tribes must have an EPA-Tribal Environmental Plan
  - GAP funding may be limited to ETEP goals and objectives
    - Keep in mind that as a "living" document, these can be changed at any time
- Waste program goals and objectives must be included in ETEP if:
  - Funded by GAP grant or GAP funding will be pursued
  - Good to include if any EPA funding will be sought for waste management
- The goals and objectives of an ISWMP and ETEP should match
  - Make sure these align in their initial development and in updates
  - Can copy and paste these from one document to the other

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# Intro, Purpose, Exec Summary

- Begin ISWMP with brief introduction and purpose
  - This introduction and purpose can be combined in one section
  - You may also provide some background information
- Purpose → the reason(s) why the ISWMP was prepared
- An Executive Summary is optional
  - Summarize current practices, long-term goals, and selected objectives
  - Prepare after ISWMP is drafted
- Introduction & Purpose Example - SRBCI



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# ISWMP Appendices

## EXAMPLES OF OPTIONAL APPENDICES

- Information on Facilities and Waste Service Providers
  - Location, Contact Information, Hours of Operation, Website, etc.
- Examples of Outreach Materials
- Waste Characterization / Assessment Data
- Community Questionnaire / Study Results
- Feasibility Studies / Business Plans
- Fee Schedules
- Internet Resources



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# ISWMP Drafting Advice

- Copy and paste language from other documents
  - Prior ISWMPs, Other Tribe and Agency ISWMPs, Other Plans and Docs
  - Find and download example ISWMPs from internet
  - Ask EPA, ITEP, and other tribes for copies of example plans
- Research/draft current practices, laws, administration, E&O, etc.
  - Then research/draft future practices, laws, administration, E&O, etc.
- Don't attempt to draft the perfect ISWMP
  - This is a living plan to be updated regularly
  - There will always be information gaps
- At minimum, prepare sections focused on current practices and future practices for key waste streams and generators
  - Address areas for which you may seek EPA funding
- Circulate and present draft to stakeholders to obtain feedback
  - Incorporate feedback into draft ISWMP
- Stay organized (e.g. use info tracking document)

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# ISWMP Approval

- Who approves the ISWMP?
- What is the approval process?
- How long will the approval process take?



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# ISWMP Approval

- Identify governing body / person that needs to authorize ISWMP
  - This entity or person must have authority to approve this plan
- Secure necessary signature(s) w/ name(s), title(s), and date
  - A signed resolution may be attached
- Describe the process and requirements for future review, revisions, and approval in the ISWMP
  - This may be the same process or an easier process
  - Include this information in a separate section in your ISWMP

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# ISWMP Review and Updates For an Approved Plan

- **Review and update full ISWMP at least once every 5 years**
  - Repeat all ISWMP development process – revising instead of drafting
  - Re-approval may be required
  - Include brief section explaining review and update process
    - Describe process, timing, responsibilities, etc.
  - Include ISWMP review and update in ISWMP action plan
  - Optional – review and update annually
    - Can be limited to an internal review and update (re-approval may not be necessary)
- **Review and update ISWMP action plan at least annually**
  - Include ISWMP action plan review and update in ISWMP action plan
  - Optional – review and update

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# ISWMP Implementation

- Share and follow the ISWMP Action Plan
  - Make sure that you initially share and review with implementation staff
- Prepare detailed work plans (if needed)
- Identify, pursue, and secure needed resources
- Determine responsibilities
- Set specific deadlines
- Implement objectives
- Regularly review plan to monitor and evaluate progress
  - Meet and review w/ implementation staff; Adjust action plan as needed
- Update plan w/ new/revised objectives and repeat

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# Thank You!
# Questions?

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## Health, Safety, and Sorting Guidelines

The following is a summary of the primary procedural methods that should be employed to best ensure that safety and health is protected during the waste assessment:

1) **Potential Hazards**. The following hazards may be present during the waste assessment:
    a. **Physical hazards**
        i. Cuts and punctures from handling hazardous materials: hypodermic needles, broken glass, razor blades, aerosol cans, chemicals, biohazards, bottles of unknown/unlabeled substances, plastic bottles containing used syringes, and other hazardous materials
        ii. Back injury
        iii. Slipping and falling
        iv. Heat stress and fatigue
        v. Animal and/or insect bites
    b. **Airborne contaminants**
        i. Dust from solid waste
    c. **Chemical hazards**
        i. Liquid spills from containers
        ii. Household and hazardous chemicals
    d. **Biological hazards**
        i. Household hazardous wastes
        ii. Medical wastes and sharps
        iii. Bloody rags or objects
        iv. Hypodermic needles
        v. Animal wastes
    e. **Geographic Hazards**
        i. Altitude sickness
        ii. Sunburn

2) **Personal Protective Equipment (PPE) "head-to-toe"**. All persons performing sorting tasks are requested to wear at a minimum:
    a. Safety glasses (sunglasses will work)
    b. Long-sleeved shirts
    c. Long pants
    d. Sturdy boots (steel-toed boots, if possible)
    e. Sturdy work gloves
        i. Nitrile liners to be worn underneath will be provided
    f. A change of clothes and shoes
        i. Bring a plastic bag for your dirty clothes
    g. Sun protection (hats and sunblock)
        i. We will be at altitude

    Liquid hand sanitizer will be available. It is recommended that personnel change out of PPE shirt, pants and shoes at the sort site, bagging soiled clothing and shoes, before returning

to the vehicles to leave the site. Clothing and shoes should be laundered/cleaned appropriately.

3) **Safety features present at the site will include:**
   - First aid kit
   - Emergency eyewash
   - Water for hydration

4) **Sort personnel are instructed to process refuse in this general manner:**
   The waste will be removed from the dumpsters and placed on a protected surface (tarps covering the ground). Use rakes to spread loose refuse so that majority of individual materials/items are released from compacted piles. Remove clearly accessible items first. As each item picked up and moved to a sorting bin, always be attentive to potential existing hazards such as broken glass, sharp edges, needles, biohazards, etc. These hazardous items should be moved with a shovel to a specially designated containment bin. Once a loose refuse pile has been cleared of its recyclables, it should be shoveled into a garbage can, weighed as "residual", and then dumped into the final landfill-bound dumpster.

   Refuse that is contained in a garbage bag should be carefully moved (pick up only by loose edges -- do not hold against legs, arms, etc.) to a flat surface, and sliced open across its longest length with a utility knife so that contents are clearly visible. Look first to assess for the presence of hazards, before reaching in to pull recyclables. Opened edges of bag can be gripped and bags tipped in different directions to move items within the bag into better view and/or positioning for removal. Individual bags that have been cleared of recyclables can be carefully picked up by their edges so that residual remains inside, placed in garbage cans, weighed and dumped into the dumpster.

   The goal is to move as many recyclable materials as possible from the refuse being surveyed, but with safety being the primary filter. Recyclable items that are heavily contaminated with food wastes; present in bags that contain human or animal wastes (i.e. diapers, feminine hygiene products, kitty litter); or mixed with suspected hazardous materials (unknown oils, chemicals, etc.) shall not be retrieved.

   There will be one person dedicated to reading the scale and recording data, and ensuring that the process is documented by photographs. The sort "Coordinator" will provide initial sort method safety and process training to all personnel; guidance on specific questions regarding the proper segregation of recoverable items, and continual oversight of activities to ensure safety to participants.

5) **Key safety rules:**
   - All waste sorting personnel should be in good physical condition and not be sensitive to odors and dust
   - Do not open any containers found in the refuse sample
   - Do not touch suspicious materials (including any materials with suspected biohazards (blood/body fluids staining, human/animal wastes, etc.); syringes; containers taped together; paraphernalia indicative of methamphetamine production –i.e. numerous

ammonia bottles, cold capsule containers, etc.); and other potentially hazardous materials (unknown oils, chemicals, etc.) Move these materials to the designated "hazardous/special waste" bin using a shovel

- If heavy, bulky objects need to be moved; lift correctly utilizing leg strength, and/or enlist assistance of "helpers"
- Take rest & refreshment breaks as needed (please stay hydrated), but no drinking or eating in sort area

**Waste Assessment Plan**

1. Identify and Select Waste Streams
2. Select Audit Date
    a. Best to conduct immediately prior to collection
3. Recruit Assessment Team
    a. Coordinator
    b. Sorters
    c. Data Collector
4. Identify and Secure Supplies
5. Prepare Data Collection Forms
    a. These must align with the selected waste streams
6. Develop Health & Safety Plan
7. Prepare Sorting and Data Collection Steps and Protocol
8. Inform Sorting Team of Required Attire and Supplies
9. Label and Weigh Sorting Bins and Prepare Station Signs
    a. There should be at least one for each waste stream
10. Conduct Pre-Event Walkthrough
    a. Set up site and go through all steps and protocol
11. Setup Supplies and Stations
12. Conduct Pre-Assessment Orientation & Training
    a. Review Steps & Protocol
    b. Review Health & Safety Plan
    c. Assign Roles
13. Perform Waste Sort
    a. Put on personal protective equipment (PPE)
        i. Appropriate clothing, glasses, gloves, hats, and sunblock
    b. Remove waste from dumpsters and place in a central location
        i. With equipment (preferred) or manually
    c. Open bags and spread out waste
    d. Sort waste into appropriate piles (at corresponding station)
    e. Place waste in designated container and weigh on scale
    f. Record weight in appropriate place on data sheet
        i. Dump waste back into dumpster
    g. Cleanup Site
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**Tribal Integrated Solid Waste Management Plan**


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## WASTE MANAGEMENT FACILITIES

## WASTE MANAGEMENT PROVIDERS

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# APPENDIX B – WASTE ASSESSMENT DATA


# Characterization of the Solid Waste Stream of the Tohono O'odham Nation

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## Abstract

The Tohono O'odham Nation's Solid Waste Management Program (SWMP) and the Sonora Environmental Research Institute, Inc. (SERI) completed a waste characterization study for the Tohono O'odham Nation (the Nation) to aid in the development of an effective waste management plan. The Nation has recently switched from open dumping and burning of waste to collection in dumpsters and transportation to regulated landfills. The study indicated that members of the Nation produce approximately one-third of the average amount of municipal solid waste produced per person per day in the United States. Far fewer hazardous materials and yard trimmings are found in the waste stream than is the U.S. average. Source reduction options are limited because much of the residential waste comes from packaging materials. Recycling opportunities exist but are hampered by the long distance to markets, which forces the Nation to look at innovative ways of utilizing materials on site. An education program focusing on the traditional O'odham lifestyle has been implemented to help reduce solid waste generation while improving people's health and the environment.

*SERI research assistant Jamie Kern conducts the primary sort of the trash during the waste characterization.*

## Introduction

The Nation occupies 2,834,000 acres of land and extends from south of Casa Grande, Arizona, to the U.S./Mexico border. It is divided into 11 districts and 74 villages with a total population of about 8,906 (U.S. Census Bureau, 2000). The Nation as a whole believes that living in harmony with the earth is essential to its well-being. During the last 30 years, lifestyle changes have caused conflict with this belief. More and more, the population is using convenience items not used before. These new products are generating waste previously not dealt with by the O'odham people. Prior to 1996, most of the Nation's households disposed of their solid waste by open burning and dumping (Tohono O'odham Nation, 1996). Many residences had burn barrels, and each village had a community dump. Little maintenance was provided for these dumps once they were excavated. As trenches filled, the waste was burned to extend the useful life of the dump. With no controls, the dumps were a source of air and water pollu-

*Previous solid waste disposal relied on community dumps consisting of trenches where trash was burned and more added.*

*The old community dumps had few controls. Windborne debris and ponding of water resulted.*

tion, and windborne trash often covered the surrounding land.

The Nation recognized the need for a better method of handling solid waste and enacted the Solid Waste Management Code (Solid Waste Code) in 1997 (Tohono O'odham Nation, 1997). The Solid Waste Code addressed the Nation's desire to manage its solid waste in a manner that would protect the environment, the political integrity, and the economic security of the Nation and the health, safety, and welfare of its members. In creating this legislation, the Nation voluntarily decided to come into compliance with the U.S. Solid Waste Disposal Act, 42 U.S.C. 6901, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA, 1976).

The Solid Waste Code created a collection system for nine of the 11 districts. The solid waste needs of the other two districts are met by private contracts at the district level. Those two districts are, however, still bound by the requirements of the Solid Waste Code. The open dumps were closed and replaced with waste dumpsters, and the Nation began hauling its waste to regulated landfills. In an effort to prevent pollution, the Solid Waste Code expressly prohibits the disposal in the waste collection system of liquids in amounts greater than 1 gallon and certain dangerous wastes, including household hazardous waste (HHW), biomedical wastes, asbestos, and tires (Tohono O'odham Nation, 1997). The response thus far to the adoption of the Solid Waste Code has been positive. In fact, Nation members recently voted for a five-dollar-per-month-per-household fee to support solid waste activities. One problem that persists is illegal dumping. SWMP is utilizing its outreach program to bring dumping under control while continuing to provide education about the Solid Waste Code.

## TABLE 1

**Selection of Dumpsters for Waste Characterization**

| Category | Subcategory | Characteristic | Number of Dumpsters |
|---|---|---|---|
| 1. Residential | | | |
| | a) Population center (Sells) | Family owned | 2 |
| | | Rental units | 1 |
| | b) Main road village (San Simon) | 35 miles from Sells | 1 |
| | c) Rural villages | | |
| | Pisinemo | 32 miles from Sells | 1 |
| | Gu Vo | 53 miles from Sells | 1 |
| | Menager's Dam | 72 miles from Sells | 1 |
| 2. Nonresidential | | | |
| | a) Supermarket | | 1 |
| | b) Other commercial | | |
| | Department of Education | | 1 |
| | fire department | | 1 |
| | commodities warehouse | | 1 |
| | administration building | | 1 |
| | legislative building | | 1 |
| | judicial building | | 1 |

### Current Disposal Procedures

SWMP collects waste from 600 residentia dumpsters once a week and from most nonres idential sources twice a week. Nonresidentia sources are limited primarily to the populatio center of Sells and include several governmen buildings, two schools, one jail, the Health Services Clinic, the U.S. post office, th U.S. social security office, one supermarke three convenience stores, one bank, one cafe

## TABLE 2

**Waste-Sorting Categories**

| Paper | Plastic | Glass | Other | Metal | Organic | Durables | Non-construction Demolition Debris | Hazardous Waste |
|---|---|---|---|---|---|---|---|---|
| Newspaper<br>Corrugated cardboard<br>Glossy magazines<br>Telephone books<br>High-grade office paper<br>Mail/paperboard<br>Nonrecyclable paper | PET<br>HDPE<br>Polystyene<br>Plastic film<br>Nonrecyclable plastic | Clear<br>Colored (amber, green)<br>Nonrecyclable glass | Diapers<br>Rubber<br>Textiles<br>Miscellaneous | Aluminum cans<br>Aluminum foil<br>Ferrous cans<br>Ferrous scrap<br>Nonrecyclable metal | Food<br>Yard trimmings<br>Other organic | Appliances<br>Bulky waste | | |

and one video store. Nonresidential sources outside of Sells include three gas stations, four convenience stores, one casino, five schools, and two small health clinics.

## Methods

### Sampling Site Determination

In waste characterization studies, waste is usually divided into residential and nonresidential categories, with appropriate subcategories such as distance from a population center (Rathje & Murphy, 1992). Two categories were chosen for this study: residential and nonresidential. The residential category was further divided into three subcategories based on village location and socioeconomic status, and the nonresidential category was divided into the subcategories of "supermarket" and "other commercial" (Table 1). The residential subcategories are as follows:

1. Population center—Sells is the seat of government for the Nation and includes most commercial activities.
2. Main road village—San Simon is located within 35 miles of Sells and is on the main road.
3. Rural villages—Pisinemo, Gu Vo, and Menager's Dam are 32, 53, and 72 miles from Sells, respectively. They are off the main road and are considered rural villages. Menager's Dam is approximately 5 miles from Mexico.

For collection purposes, Sells was further divided into family-owned and rental units. The supermarket waste stream was assigned a subcategory of its own because it differed significantly from that of the other nonresidential entities.

### Representative-Sample Collection

SWMP collected dumpsters for sorting on normally scheduled pickup days. To prevent compaction of garbage and mixture with other samples, the dumpsters were transported to the sorting area rather than being emptied into a garbage truck. Residents were not told that the study was being carried out, so no alteration of the typical waste streams was expected.

### Waste Sorting

All residential samples consisted of one week's worth of waste, while nonresidential samples represented one-half week's accumulation. One dumpster at a time was sampled, sorted, and weighed, and all waste flowed in only one direction through the work area (primary sorting, secondary sorting, and weighing station). Rathje and Murphy (1992) have demonstrated that the accuracy of waste characterizations depends more on the accuracy of sorting than on the quantity of waste sorted; consequently, the procedures used by the Garbage Project at the University of Arizona were followed for this study.

*Primary Sorting*

Waste was placed on the primary sorting table, where the material was separated into 15 main categories—glass, plastic, paper, food, yard trimmings, metal, wood, durables, hazardous waste, diapers, textiles, rubber, miscellaneous, "other mixed inorganic," and "other mixed organic." These primary sorting categories were chosen to facilitate the sorting process.

*Secondary Sorting*

After primary sorting, the materials were passed to the secondary sorting crew and further sorted into 31 categories based on those used by the Garbage Project (Rathje & Murphy, 1992) (Table 2).

*Weighing*

After the secondary sort, the material was transferred into previously tared containers and weighed on an electronic scale. After each dumpster was sorted and weighed, the waste was disposed of, and the work area was cleared, swept, and prepared for the next sort.

## Results

### Quantities of Solid Waste Generated

Workers sorted a total of 1,931.37 pounds of residential and 1,596.14 pounds of nonresidential waste. Approximations of the total generation of waste on the Nation were made with scaling factors to convert the sorted values to tons generated per week and per month and to pounds generated per person per day. For example, the three dumpsters from Sells residential neighborhoods constituted about 3 percent of the total number of dumpsters (93) in Sells neighborhoods. One week's worth of refuse from these three dumpsters was 683.44 pounds. Scaling this to the entire residential population of Sells gives 21,187 pounds of waste generated per week, or 1.04 pound per person per day (ppd). With seven-day weeks and four-week months as the basis for calculation, Sells residences generated 42.37 tons per month of waste. The amounts of daily waste generated

in the other villages were calculated in the same way and are shown in Table 3.

For the category "other commercial," each dumpster sorted was one of two picked up per week, so approximating the total waste generated required that the sorted quantities be doubled. The supermarket dumpster was one of three picked up per week, so the sorted quantities had to be tripled. In addition, the seven dumpsters of nonresidential waste constituted about 12 percent of the total number of nonresidential dumpsters (60). The scaling accounted for this fact as well, indicating 38.95 pounds of nonresidential waste generated per month (Table 4).

To find the total number of tons generated by the Nation per month, the calculated value for the sampling size was scaled for the total population of the Nation. The size of the population included in the waste characterization was 3,920. Given the Nation's population of 8,906, the scaled-value calculation is 98.85/3,920 x 8,906 = 224.58. The Nation's average tons per month for the months of October 1998 to May 1999 was 242, with a range of 193 to 368 tons per month. The scaled value is relatively close to the actual average and well within the range of monthly values.

## TABLE 3

**Quantities of Residential Solid Waste Generated**

| Waste stream | Generation Rate (pounds/person/day) | | | |
|---|---|---|---|---|
| | Total | Packaging | Ferrous Cans | Plastic |
| Sells residential | 1.04 | 0.44 | 0.12 | 0.01 |
| San Simon | 0.50 | 0.09 | 0.05 | 0.01 |
| Pisinemo | 1.12 | 0.46 | 0.19 | 0.10 |
| Gu Vo | 1.29 | 0.57 | 0.16 | 0.12 |
| Menager's Dam | 1.93 | 0.46 | 0.22 | 0.07 |

## TABLE 4

**Generation Rates by Waste Stream**

| Waste Stream | Generation Rate (tons per month) |
|---|---|
| Supermarket | 10.02 |
| Other commercial | 28.93 |
| Sells | 42.37 |
| San Simon | 0.96 |
| Gu Vo | 5.59 |
| Pisinemo | 6.17 |
| Menager's Dam | 4.81 |
| **Total** | **98.85** |

### Characterizations of the Waste Streams

*Residential Waste Streams*

The daily waste generation rates in the residential areas ranged from 1.93 ppd in Menager's Dam to 0.55 ppd in San Simon (Table 3). In the rural villages, as the distance from Sells increased, the pounds per day increased. A common explanation of higher waste generation rates in rural areas is that people who live further away buy more food that is packaged than people who live in population centers, where more fresh food may be available (Dahab & Woldt, 1994). Table 3 gives the amount of packaging waste generated per day, with "packaging" defined as glass, plastic, and metal containers; plastic film; cardboard; and paperboard (U.S. Environmental Protection Agency [U.S. EPA], 2001). Sells, Gu Vo, and Pisinemo had similar rates of packing waste; Menager's Dam rates were higher. Looking specifically at ferrous cans (tin) and plastic containers, however, demonstrates that the most common storage containers actually were generated at a higher ppd rate. Gu Vo and Menager's Dam generated food waste at higher rates than did the other communities. Menager's Dam is a community with homes requiring modernization; spoilage of food may occur more easily.

The community of San Simon was expected to have a generation rate similar to or slightly higher than that of Sells, but instead had a significantly lower rate. As can be seen in Table 3, the amount of packaging waste is considerably lower in San Simon than in any of the other communities, which accounts for the overall lower rate. A visual inspection of San Simon identified several gardens, but the community is probably purchasing much of its food from the supermarket in Sells. Many of the residents work in Sells; perhaps some of the packaging waste is being disposed of there. At this time, no other specific explanation can be given for the low generation rate.

A profile of the Sells waste stream is given in Table 5 as an example of residential waste streams. The residential waste streams had a variety of materials but were dominated by food, metal, and glass containers. Few to no yard trimmings were found in the waste, probably because of the nonlandscaped desert environment surrounding the homes. A similar result was found for the Kaibab Paiute Nation at less than 2 percent by weight, compared with 19.7 percent for Tucson, Arizona (Hughes, Makowsky, Austin, & Johnson, 1998).

The "hazardous waste" category included any items that could be hazardous to p e, animals, or the environment, such as sharps (primarily hypodermic needles) and hazardous chemicals. Sharps were found in all but one of the residential waste streams. As has been found in other studies of rural communities, the majority of sharps were deposited in the trash directly rather than placed in a container (U.S. EPA, 2001). Few containers of hazardous materials (including detergents) were found, and very little HHW. For all containers (bleach, detergent, nail polish, roofing material, and soaps/waxes) only a nail polish bottle in Sells contained more than a negligible amount of liquid. The total number of household batteries in the entire solid waste stream sort was unde 30—not even 0.04 percent by weight, which is significantly lower than the percentage found in other studies (Wilson & Rathje 1989). The weight fraction of HHW, at 0.1 percent, is also significantly lower than th percentage found in other studies. For th Kaibab Paiute Nation, the Garbage Projec found 0.69 percent (Hughes et al., 1998) Over 10 years of sorts, the Garbage c found that HHW ranged from 0.2 percent t 0.6 percent (Rathje, 1997).

## TABLE 5

**Waste Stream Characterization for Sells and the Legislative Building**

| Category | Percentage of Total Weight | |
|---|---|---|
| | Sells | Legislative Building |
| Paper | | |
| newspaper | 7.95 | 4.60 |
| corrugated cardboard | 4.98 | 5.15 |
| glossy magazines | 1.67 | 11.48 |
| telephone books | 0.00 | 2.14 |
| office paper | 0.32 | 37.98 |
| mail/paperboard | 5.01 | 11.48 |
| nonrecyclable paper | 8.99 | 8.95 |
| Plastic | | |
| PET | 2.24 | 4.01 |
| HDPE | 1.41 | 0.00 |
| polystyrene | 1.92 | 1.10 |
| plastic film | 3.91 | 3.84 |
| nonrecyclable plastic | 1.65 | 0.00 |
| Glass | | |
| clear glass | 7.49 | 3.75 |
| colored glass | 10.71 | 0.00 |
| nonrecyclable glass | 0.60 | 0.00 |
| Metal | | |
| aluminum cans | 0.93 | 2.99 |
| aluminum foil | 0.79 | 0.50 |
| ferrous cans (tin) | 1.29 | 0.02 |
| ferrous scrap | 1.60 | 0.00 |
| nonrecyclable metal | 0.00 | 0.00 |
| Organic | | |
| food | 19.71 | 1.61 |
| yard trimmings | 0.12 | 0.00 |
| other organic | 1.06 | 0.00 |
| Construction and demolition | 0.00 | 0.00 |
| Durables | | |
| appliances | 1.51 | 0.00 |
| bulky waste | 0.00 | 0.00 |
| Other | | |
| rubber | 1.93 | 0.00 |
| diapers | 7.47 | 0.00 |
| textile | 3.97 | 0.00 |
| miscellaneous | 0.00 | 0.00 |
| Hazardous waste | 0.70 | 0.44 |
| **Total** | **100.00** | **100.00** |

*Nonresidential Waste Streams*

*Other Commercial.* The waste stream from the legislative building is profiled in Table 5 as an example of nonresidential waste streams. The waste streams of the government buildings were dominated by paper categories. Several dumpsters had residential items such as diapers. These could be attributed to residential contamination or, more likely to the prevalence of young children being taken to work. In commercial dumpsters, even fewer hazardous materials were found. Again, all containers, except one motor oil container, held only negligible amounts of liquid.

*Supermarket.* The supermarket's waste stream comprised primarily of food, paper, and plastic. The largest percentage of the waste was food, totaling 64.90 and consisting primarily of expired drinks such as milk and fruit juices. Over 90 percent of the food had expired within four days of the sorting. The percentage of paper, 11.67, was low because the supermarket already recycles cardboard. The waste that fell into the plastic category—13.24 percent—consisted primarily of plastic film and nonrecyclable plastics.

**Comparison with the U.S. Average**

Although dividing waste streams into residential and nonresidential categories is useful in the study of community waste generation, published data on municipal waste include commercial waste. The most recent U.S. EPA report on municipal solid waste generation includes waste from schools, businesses, institutions, and prisons in its calculations of municipal solid waste. HHW, industrial waste, biosolids, automobiles and construction debris are not included (U.S. EPA, 2001). A comparison of U.S. average waste generation and the waste generation of the Nation, following the definition given above for municipal solid waste and the categories given in the U.S. EPA report, is shown in Table 6. Similar trends are seen, except in the "food" and "yard trimmings" categories. The amount of food waste is disproportionately affected by the supermarket's waste, which represents over 26 percent by weight of the total nonresidential waste stream.

Even with commercial waste included, the generation rate of the Nation is only 1.66 ppd, compared with 4.62 ppd for the United States in 1999 (U.S. EPA, 2001). This disparity can be attributed to several factors. The Nation is not a throwaway society. Items are often reused several times. The traditional lifestyle emphasizes living in harmony with the environment. Part of the SWMP education program consists of elders speaking to children and young adults about the traditional lifestyle and respecting the land. Another contribution to the low generation rate may be the low average income on the Nation compared with the U.S. average and, hence, a decreased spending power that leads to less purchasing and less waste (U.S. Census Bureau, 2000).

**Recyclables**

The recyclables category includes newspaper, cardboard, magazines, mail/paperboard, polyethylene terephthalate (PET), high-density polyethylene (HDPE), polystyrene, clear and colored glass, aluminum cans and foil, plastic film, ferrous cans, and ferrous scrap. Only items reasonably likely to be recycled are considered recyclable; the category does not include items that are potentially recyclable but in practice are not recycled. Recyclables constituted from 24.88 percent

to 52.23 percent (by weight) of the residential waste streams, with Sells having the highest percentage, and from 9.31 percent to 88.97 percent in the nonresidential waste, with the legislative building having the highest percentage (Table 7).

Table 7 gives the top three recyclable materials found in each waste stream. All nonresidential waste streams except the supermarket stream had a paper product as the top recyclable item. Gu Vo and Sells had mixed colored glass as the most common recyclable (12.09 percent and 10.71 percent, respectively). Menager's Dam and San Simon had paper as the most common recyclable—magazines at 5.12 percent and newspaper at 8.96 percent, respectively. Pisinemo had ferrous cans as its top recyclable, at 11.19 percent. All of the villages except Sells had ferrous cans as a top recyclable, probably reflecting the distance from the supermarket.

## Discussion

Because waste disposal is such a costly business, the Legislative Council feels the first and best line of defense is to reduce waste generation. SWMP has taken several steps toward that goal by implementing a traditional-living education program. The Nation has made a strong commitment to building new housing and modernizing bathrooms in existing homes. The population is moving from dirt-floor homes, in which few convenience cleaning items are used, to modern houses, in which there is a great potential for reliance on convenience items. The traditional-living program includes traditional methods for performing household cleaning activities in hopes of reducing the use of cleaners and the generation of containers. SWMP's pollution prevention program also emphasizes simple ways to reduce the waste stream, such as reusing containers, using both sides of a piece of paper, and buying only what is needed. Unfortunately much of the waste in the residential waste stream is due to packaging provided by manufacturers. For many of these items, recycling is the most viable option.

### Recyclable Materials

The majority of the commercial waste is generated in Sells, facilitating collection of recyclables. An office paper recycling program has recently been implemented, and the cardboard program expanded. The supermarket now collects grocery bags (a plastic film). Institution of these programs is reducing the commercial waste stream. SWMP is currently looking into other recycling opportunities. Metal recyclers exist in Tucson, approximately 70 miles from Sells. Newspaper and glass must be transported to Phoenix, while the only market for plastic is in southern California. The most feasible option at this time is the institution of aluminum-can dropoff centers. Since a buy-back value is attached to this material, the endeavor may be economically viable. A collection program for ferrous cans and glass would further reduce the residential waste stream. The necessity of transportation to Tucson and Phoenix limits the profitability of such programs; however, the reduction in tonnage fees paid a operation and maintenance costs of waste c lection vehicles may offset collection a transportation costs.

The best approach is to find potential e uses for the materials on the Nation. Becau of the current upgrading of bathrooms and t installation of septic systems, grou could be reused on the Nation. A sep tem leachfield consists of a series of trench that contain perforated pipe packed in a gr

## TABLE 6

**Make-up of Waste Stream—U.S. Average Compared with Tohono O'odham Nation**

| Category | Percentage of Weight | |
|---|---|---|
| | U.S. Average | Tohono O'odham Nation |
| Paper and paperboard | 38.06 | 31.73 |
| Glass | 5.48 | 8.02 |
| Steel | 5.78 | 2.88 |
| Aluminum | 1.35 | 1.51 |
| Other nonferrous | 0.61 | 0.00 |
| Plastics | 10.52 | 11.90 |
| Rubber and leather | 2.70 | 0.63 |
| Textiles | 3.96 | 5.49 |
| Wood | 5.35 | 0.24 |
| Food | 10.96 | 27.22 |
| Yard trimmings | 12.05 | 0.17 |
| Miscellaneous inorganic | 1.48 | 5.60 |
| Other | 1.74 | 3.74 |
| Hazardous waste | NA | 0.87 |
| **Total** | **100.04*** | **100.00** |

*The value above 100% is attributable to rounding-off errors.

## TABLE 7

**Percentage of Recyclables, by Weight, in Waste Streams**

| Waste Stream | Percentage of Recyclables | Top Three Recyclable Commodities | | |
|---|---|---|---|---|
| Supermarket | 9.31 | Plastic film | Cardboard | PET |
| San Simon | 24.88 | Newspaper | Clear glass | Ferrous cans |
| Menager's Dam | 28.30 | Magazines | Plastic film | Ferrous cans |
| Pisinemo | 39.82 | Ferrous cans | Plastic film | Clear glass |
| Gu Vo | 47.92 | Colored glass | Ferrous cans | Newspaper |
| Judicial building | 48.90 | Mail/paperboard | Plastic film | PET |
| Sells residential | 52.23 | Colored glass | Newspaper | Clear glass |
| Fire department | 54.34 | Cardboard | Mail/paperboard | Colored glass |
| Department of Education | 78.22 | Office paper | Newspaper | Mail/paperboard |
| Commodities warehouse | 81.13 | Cardboard | Plastic film | Ferrous scrap |
| Administration building | 87.48 | Mail/paperboard | Cardboard | PET |
| Legislative building | 88.97 | Office paper | Magazines | Mail/paperboard |

el bed. A standard leach field requires 33 cubic yards of gravel, which the Nation proposes to replace with ground glass. A glass grinder is available at low cost for pilot testing and eventual implementation. The reuse of the glass would have a twofold impact: 1) The material would be recycled and diverted from the waste stream. 2) Resources would be saved because the Nation would not be shipping the material elsewhere and would not have to ship in or mine gravel for the septic-system upgrades.

**Food Waste**

Composting is not widely practiced on the Nation. The only place where some indication of composting was seen was on the hospital grounds next to a small vegetable garden, where several wooden boxes of garden trimmings were set apart from other materials. It did not look like a very active project, however. While composting would ideally be a way to reduce the amount of food waste, it is not at present a very practical option. The desert environment does not easily lend itself to composting, and little demand for composted material is evident.

In the United States, supermarkets often send food to local food banks (Heumann, 1999). The supermarket in Sells throws away significant quantities of food. The waste characterization carried out in this study suggests that the main reason for food being thrown away was expiration date rather than spoilage. One of the goals of SWMP is the donation of this food to families on the Nation. The main issue will be timely donation with respect to the expiration dates. Preliminary contacts with the supermarket indicate a willingness to attempt some type of cooperative effort. SWMP also is trying to see if anyone who raises livestock would be interested in taking the food to feed to animals.

**Hazardous Waste**

Very little hazardous waste was found in the waste streams. Previous reconnaissance of the open dumps also found few HHW containers. Zeiss (1994) found the weight fraction of HHW disposed of by rural communities to be 3.6 percent, compared with 0.87 percent (including containers) found for the Nation. In 1999, because the percentage of HHW was low, a dropoff station for antifreeze, batteries, oil, and paint was set up instead of a full HHW collection facility. In January 2002, a grant from U.S. EPA enabled the Nation to purchase necessary equipment, set up outreach sites in other districts, and provide education. After the waste characterization, SWMP had established an education program focused on alternatives and the proper use and disposal of hazardous materials. The U.S. EPA grant has allowed SWMP to expand its outreach program, with a focus on presentations to schools and at community events and meetings.

## Conclusion

The Nation has made a successful transition from open dumps and burning of waste to collection of waste in dumpsters. Residents are concerned about solid waste management and are committed to a successful program. The Nation produces far less solid waste per person than most U.S. communities—it appears to be far less of a "throw-away" society. This study provided valuable data for setting solid waste management goals and for tracking progress toward those goals. It highlighted opportunities for recycling and provided information on special management issues that should be addressed, such as reducing food waste. The long distance to markets limits the kinds of programs that can be adopted, and the Nation must develop innovative ways to divert materials from the waste stream. Currently, a viable way of reusing glass in the installation of septic systems is promising. The transition has helped to preserve and protect the health of the Nation's members and the integrity of its land.

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# SOLID WASTE TERMS AND DEFINITIONS

**AEROBIC**: Organic waste decomposition in the presence of oxygen in the process of composting.

**AERATE**: To expose to or mix with air.

**ALGAL BLOOM:** Population explosion of algae in surface waters; are associated with nutrient-rich run-off from compost facilities or landfills.

**ANAEROBIC DECOMPOSITION**: Organic waste decomposition in the absence of oxygen, bacteria that breathe inorganic oxidants contribute to the process resulting in a methane gas release.

**BALEFILL**: A landfill that only accepts waste that has been baled.

**BALER**: A machine used to compress recyclables or waste into bundles to reduce their volume; often used on newspapers, plastics, corrugated cardboard, and other recyclables.

**BIODEGRADABLE**: A property of a substance or material which allows it to be broken down into a simple stable compound (e.g. water and carbon dioxide) by microorganisms and other decomposers such as fungi.

**BOTTLE BILL:** A law requiring deposits on beverage containers (see Container Deposit Legislation).

**BROWNFIELD:** Abandoned or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contaminations. Land that is more severely contaminated and has high concentrations of hazardous waste or pollution, such as a Superfund or hazardous waste site, does not fall under the brownfield classification.

**BUFFER ZONE:** Neutral area which acts as a protective barrier separating two conflicting forces; an area which acts to minimize the impact of pollutants on the environment or public welfare. For example, a buffer zone is established between a composting facility and neighboring residents to minimize odor problems.

**BULKING AGENT:** A material used to add volume to another material to make it more porous to air flow. For example, water treatment sludge may act as a bulking agent when mixed with municipal solid waste.

**BULKY WASTE:** Large items of refuse including, but not limited to, appliances, furniture, and auto parts, which cannot be handled by normal solid waste processing, collection and disposal methods.

**BUY-BACK CENTER:** A facility where individuals bring recyclables in exchange for payment.

**BURN BARREL**: A container used for open burning of waste.

**BUY-BACK CENTER**: A facility which can collect recyclables in exchange for payments.

**CAUSTIC**: Able to corrode, dissolve, burn, or be eaten by means of a chemical.

**CLASS A SOLID WASTE FACILITY:** A commercial solid waste facility which handles an aggregate of between 10,000 and 30,000 tons of solid waste per month. Class A facility includes two or more Class B solid waste landfills owned or operated by the same person in the same county, if the aggregate tons of solid waste handled per month by such landfills exceeds 9,999 tons of solid waste per month.

**CLASS B SOLID WASTE FACILITY:** A commercial solid waste facility which receives, or is expected to receive, an average daily quantity of mixed solid waste equal to or exceeding 100 tons each working day, or serves, or is expected to serve a population equal to or exceeding 40,000 persons, but which does not receive or is expected to receive solid waste exceeding an aggregate of 10,000 tons per month. Class B solid waste disposal facilities do not include construction/ demolition facilities: Provided, that the definition of Class B facility may include such reasonable subdivisions or sub classifications as the director may establish by legislative rule proposed in accordance with legal provisions.

**CLASS C SOLID WASTE FACILITY:** A commercial solid waste facility which receives, or is expected to receive, an average daily quantity of mixed solid waste of less than 100 tons each working day, and serves, or is expected to serve a population of less than 40,000 persons. Class C solid waste disposal facilities do not include construction/demolition facilities.

**CLASS D SOLID WASTE FACILITY:** Any commercial solid waste facility for the disposal of only construction/demolition waste and does not include the legitimate beneficial reuse of clean waste concrete/masonry substances for the purpose of structural fill or road base material.

**CLOSURE**: The termination of the active life of a waste management unit by either:
1) installation of a final cover, or 2) removal of all waste and contaminated soils and containment devices.

**COMMINGLED RECYCLABLES**: Mixed recyclables that are collected together after having been separated from mixed municipal solid waste.

**COMPACTOR:** Power-driven device used to compress materials to a smaller volume.

**COMPOSTING**: The controlled decomposition of organic materials such as leaves, grass, and food scraps by microorganisms. The result of this decomposition process is compost, crumbly, earthy-smelling, soil-like material.

**CONSTRUCTION AND DEMOLITION (C&D) DEBRIS:** This includes materials from construction projects, remodeling, repair jobs, demolition of buildings, bridge construction, pavement, roofing, and other activities. Materials include concrete, asphalt, wood, metals, and drywall (gypsum wallboard, sheet rock, or plaster). Some tribes and states regard land clearing debris such as stumps, rocks, and dirt as C and D debris.

**CONTAINER DEPOSIT LEGISLATION (Bottle Bills):** Laws that require monetary deposits to be levied on beverage containers. The money is returned to the consumer when the containers are returned to the retailer.

**CONVENIENCE CENTERS:** Drop-off sites for community waste and/or recyclables; typically consist of one or more bins for waste and/or recyclables and are located at spots convenient for residents, such as near major roads or at shopping centers or community centers.

**CORRUGATED CARDBOARD**: Heavy paper board sculpted into a series of ridges and groves.

**CROSS-MEDIA TRANSFER:** Refers to the transfer of hazardous materials and wastes from one environmental medium to another.

**CURBSIDE COLLECTION:** Waste or recyclable materials are collected at the curb, often from special containers, and then taken to various processing facilities.

**CULLET**: Scrap glass that is usually used to make new glass.

**DETINNING:** Recovering tin from “tin” cans by a chemical process which makes the remaining steel more easily recycled.

**DIOXIN**: One of the most toxic man-made chemicals also known as tetra chloroform of a family of compounds.

**DIVERSION RATE:** A measure of the amount of waste material being diverted for recycling compared with the total amount that was previously thrown away.

**DROP-OFF COLLECTION:** Waste, recyclable, or compostable materials are "dropped off" at collection sites and then deposited in designated containers.

**END-USE MARKET:** A company or other entity that purchases recycled materials for use as feedstock in manufacturing new products.

**ENTERPRISE FUND:** A fund for a specific purpose that is self-supporting from the revenue it generates.

**EUTROPHICATION (OR CULTURAL EUTROPHICATION):** Aquatic ecosystem over nourishment of plant nutrients; a natural process for the most part, but affected by agriculture, urbanization, and industrial discharge.

**FARM DUMP:** Refers to the placement of farm waste such as old equipment, household garbage, fence posts and wire, etc. on the farmer's property in an open pile.

**FLOW CONTROL:** A legal or economic means by which waste is directed to particular destinations. For example, an ordinance requiring that certain wastes be sent to a landfill is waste flow control.

**FLY ASH:** The residual particles (noncombustible) from the combustion process carried by air and smoke.

**GENERATOR:** Any entity (governments, companies, communities, tribes, etc.) that produces solid waste. Generators are usually divided into the following types: 1) Residential – single or multi-family households; 2) Commercial – offices, retail and wholesale outlets; 3) Institutional – social, educational or charitable activities; and 4) Industrial – industrial processes or manufacturing operations.

**GENERATION RATE:** Amount of solid waste that is produced over a given period of time. For example, a community that produces 1,600 tons of waste per year and has a population of 2,000, will produce waste that amounts to 4.4 pounds per person, per day.

**HAZARDOUS WASTE:** A substance which has potential to cause illness or death and, if not properly managed, may substantially threaten the environment and human health.

**HIGH GRADE PAPER:** Relatively valuable types of paper such as computer printout, white ledger and tab cards; also used to refer to industrial trimmings at paper mills that are recycled.

**HOUSEHOLD HAZARDOUS WASTE:** Leftover or unused consumer products used in and around the home that contain hazardous components, including certain paints, cleaners, stains and varnishes, car batteries, motor oil, and pesticides. Certain types of household hazardous waste have the potential to cause physical injury to sanitation workers, contaminate septic tanks or wastewater treatment systems if poured down drains or toilets, and present hazards to children and pets if left around the home. While residents do not have to separate household hazardous waste from trash under federal law, some states and localities have special disposal requirements for this waste.

**HUMUS:** Organic materials resulting from decay of plant or animal matter; also referred to as compost.

**INCINERATOR:** A furnace for the routine burning of waste materials using controlled flame combustion.

**INORGANIC WASTE:** Waste composed of matter other than plant or animal (i.e. contains no carbon).

**IN SHED:** Waste generated from sources within the wasteshed in which the solid waste disposal facility is located.

**INTERMEDIATE PROCESSING CENTER (IPC):** Usually refers to the type of materials recovery facility (MRF) that processes residentially collected mixed recyclables into new products available for market; often used interchangeably with MRF.

**IN-VESSEL COMPOSTING:** A composting method in which the compost is continuously and mechanically mixed and aerated in a large, contained area.

**INTEGRATED SOLID WASTE MANAGEMENT:** A solid waste management system composed of planning, financing, regulating, operating, and managing processes. The system includes the reduction of solid waste generation (source reduction), collection, transfer, materials recycling, composting, combustion (incineration or waste-to-energy), and disposal. EPA defines the system as a process for managing solid waste and materials diverted from solid waste through combustion of any of the following four methods of management: source reduction, recycling, combustion, and land-filling.

**LANDFILL:** Any solid waste facility for the disposal of solid waste on or in the land for the purpose of permanent disposal. Such facility is situated, for the purpose of this rule in the county where the majority of the spatial area of such facility is located.

**LEACHATE ("Landfill Tea"):** Liquid that has percolated through solid waste or another medium and has extracted, dissolved or suspended materials from it which may include potentially harmful materials.

**MAGNETIC SEPARATION:** A system to remove ferrous metals from other materials in a mixed municipal wastestream. Magnets are used to attract the ferrous metals.

**MANUAL SEPARATION:** The separation of recyclable or compostable materials from waste by hand sorting.

**MATERIAL RECOVERY FACILITY (MRF):** A specialized plant/facility that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.

**MECHANICAL SEPARATION:** The separation of waste into various components using mechanical means, such as cyclones, trommels, and screens.

**MEDICAL WASTE:** All wastes from hospitals, clinics, or other health care facilities that contain or have come into contact with diseased tissues or infectious microorganisms. Medical waste include human blood and blood products, pathological waste, discarded sharp instruments (e.g. needles, lancets, scalpels, broken medical items), and contaminated animal products. The waste is referred as "red bags" due to the red-colored bags in which it is discarded.

**MULTIMEDIA:** Refers to all environmental media (air, land, and water) to which a hazardous substance, pollutant, or contaminant may be discharged, released, or displaced.

**NON-RENEWABLE RESOURCE:** A resource that cannot be replenished into its original form naturally.

**OPEN BURNING:** The uncontained burning of solid waste in a pit, pile, container, or open dump.

**OPEN DUMP:** An uncovered site used for disposal of waste without regulation or environmental controls; it must meet the Subtitle D municipal solid waste landfill standards.

**ORGANIC:** Derived from living organisms, or any compound containing carbon.

**OUT OF SHED:** Waste generated from sources outside the wasteshed in which the solid waste disposal facility is located.

**PACKAGING:** Protective wrapping or sealing of products but is not of use to the actual product itself.

**PACKAGING MATERIALS:** Any variety of materials used as a protective covering for commodities (e.g. papers, cardboards, metals, wood, paper board and plastics).

**PAPER:** Matted or felt sheets of fiber (wood pulp, rags, straw, and other fibrous material) created on a fine screen from a water suspension.

**PAPER BOARD (OR CARDBOARD):** Most commonly made from recycled paper and used for cereal boxes etc.

**PARTICIPATION RATE:** A measure of the number of people participating in recycling program compared to the total number that could be participating.

**PAY-AS-YOU-THROW (PAYT) PROGRAM:** A waste and recyclables collection program that provides a financial incentive to reduce, reuse, and recycle waste by charging residents for hauling and disposal costs based on the amount of garbage is thrown away.

**PERCOLATION:** Downward flow of water through the pores and spaces of soil and permeable rock.

**PLASTICS:** Man-made material mostly consisting of Polymers; used in addition with other organic and non-organic compounds as fillers, coolants, stabilizers and other ingredients.

**PLASTIC FOAM:** Plastic that foams during the forming process resulting in the light weight plastic used for trays, boxes, fast-food, and packaging 'peanuts' etc.

**POLLUTION CONTROL RESIDUALS:** End products of the thermal process which includes hot combustion gases composed primarily of nitrogen, carbon dioxide, water vapor (flue gas) and noncombustible residue (ash).

**POST-CLOSURE CARE:** The monitoring of a closed waste management unit to verify that unacceptable releases from the unit are not occurring.

**POST CONSUMER MATERIAL:** Any product that has served its original purpose.

**POLLUTION PREVENTION (P2):** The use of materials, processes, or practices that reduce or eliminate the creation of pollutants or wastes at the source. It includes practices that reduce the use of hazardous materials, energy, water or other resources, and practices that protect natural resources through conservation or more efficient use.

**POLYSTYRENE (PS):** Clear plastic or stiff foam (more durable) composed of hydrogen and carbon atoms made from a by-product of petroleum and natural gas distillation process.

**PUTRESCIBLE:** Organic matter partially decomposed by microorganisms and producing a foul smell.

**RECYCLING:** A series of activities that include collecting recyclable materials that would otherwise be considered waste and sorting and processing these recyclables into raw materials such as fibers; or manufacturing raw materials into new products.

**REUSE:** A process whereby a product is used more than once, either for the same purpose or for a different purpose. The reused products could be repaired, donated to charity and community groups, and sold. This process would reduce waste.

**RESOURCE RECOVERY:** A term describing the extraction and utilization of materials and energy from the wastestream. The term is sometimes used synonymously with energy recovery.

**RETENTION BASIN:** An area designed to retain run-off and prevent erosion and pollution.

**ROLL-OFF CONTAINER:** A large waste or recyclables container that fits onto a tractor trailer that can be dropped off and picked hydraulically.

**SECONDARY MATERIAL:** A material that is used in place of a primary or raw material in manufacturing a product.

**SEWAGE SLUDGE:** A semi-liquid residue that settles to the bottom of canals and pipes carrying sewage or industrial wastewaters, or in the bottom of tanks used in treating wastewaters.

**SITE REMEDIATION:** Treatment of a contaminated site by removing contaminated solids or liquids or treating them on-site.

**SOLID WASTE:** Wastes from residential, commercial, governments, and institutional sources, such as durable and non-durable goods, containers and packaging, food scraps, yard trimmings, inorganic wastes, and construction and demolition debris.

**SOURCE SEPARATION:** The segregation of specific materials at the point of generation for separate collection. Residents source separate recyclables as part of a curbside recycling program.

**SOURCE REDUCTION (OR WASTE REDUCTION):** Refers to any change in the design, manufacture, purchase, or use materials or products (including packaging) to reduce the amount or toxicity before these materials become municipal solid waste. Source reduction also refers to the reuse of products or materials.

**SPECIAL WASTES:** A non-regulatory term used by tribes to describe problem wastes typically generated by households that are not disposed in household garbage containers primarily due to their size or because of disposal restrictions. The most common special wastes include tires, furniture, bicycles, appliances and other white goods, and car batteries. Tires and lead-acid car batteries are examples of special wastes that might have disposal restrictions.

**SUPERFUND** - Common name for the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to clean up abandoned or inactive hazardous waste dump sites.

**TIPPING FEE:** A fee for unloading or dumping waste at a landfill, transfer station, incinerator, or recycling facility.

**TIPPING FLOOR:** Unloading area for vehicles that are delivering municipal solid waste to a transfer station or incinerator.

**TIRE DERIVED FUEL (TDF):** A tire that is shredded and processed into a rubber chip ranging in size from 1 to 4 inches; depending on the requirements of the users, TDF may also be processed to remove bead and radial wires. TDF has an energy content ranging from 14,000 to 15,500 BTU per pound.

**TOPSOIL:** Top layer of soil containing the most nutrients.

**TRANSFER STATION:** A site of facility where waste materials are taken from smaller collection vehicles (or private vehicles) and placed in larger vehicles, including truck trailers, railroad cars, or barges for transport. Recycling and some waste processing also might take place at transfer stations.

**TUB GRINDER:** Machine to grind or chip wood wastes for mulching, composting or size reduction.

**UNDERGROUND STORAGE TANK (UST):** A tank and any underground piping connected to the tank that has at least 10 percent of its combined volume underground.

**VARIABLE CONTAINER RATE:** A charge for solid waste services based on the volume of waste generated measured by the number of containers set out for collection.

**VECTORS**: Organisms that carry disease-causing pathogens.

**VOLUME REDUCTION:** The processing of waste materials so as to decrease the amount of space the materials occupy, usually by compacting or shredding (mechanical), incineration (thermal), or composting (biological).

**WASTEPAPER:** Discarded paper that can be recycled by grade if separated properly before entering the waste stream.

**WASTE REDUCTION:** Using source reduction, recycling, or composting to prevent or reduce waste generation.

**WASTE STREAM:** The total flow of solid waste from generators within the jurisdiction that must be recycled, reused, or disposed of.

**WASTE-TO-ENERGY (Gaseofication):** The process of burning solid waste to create energy in the form of steam or electricity.

**WASTEWISE:** It is designed to support local government efforts in residential solid-waste reduction and related climate change impacts. WasteWise communities will accept and recognize annual residential waste-reduction data, thereby expanding the scope of WasteWise. Communities will work with municipalities to decrease climate footprints by providing tools and resources to communities seeking economically viable solutions to reduce waste and curb greenhouse gas emissions.

**WATER TABLE:** Level below the earth's surface at which the ground becomes saturated with water.

**WETLAND:** An area that is regularly wet or flooded and has a water table that stands at or above the land surface for at least part of the year.

**WHITE GOODS**: Large household appliances such as refrigerators, stoves, air conditioners and washing machines.

**WINDROW:** A large, elongated pile of composting material.

**WOOD FIBER:** Stringy substance made from wood that keeps the ingredients that makes paper together. Also gives the paper its texture.

**WOOD PULP:** The combination of wood fibers to make paper and paper board.

**YARD TRIMMINGS (OR YARD WASTE):** Trimmings include grass, clippings, prunings, and other natural organic matter discarded from yards or gardens; tree stumps and brush could be considered as well.

## FEDERAL STATUES/LEGISLATION

**CLEAN AIR ACT (CCA)**: The Act is a federal law that requires EPA to set national health-based air quality standards to protect people and the environment against common pollutants, including ozone (smog), carbon dioxide, sulfur dioxide, nitrogen dioxide, lead, and particular soot. State governments must prepare clean-up plans to meet the health standards by a specific date. In addition, EPA sets national standards for major new sources of pollution including automobiles, trucks, and electric power plants. The agency is also charged with developing controls for major sources of such toxic pollutants as benzene.

**CLEAN WATER ACT (CWA):** The Act is a federal law that established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The Act also continued requirements to set water quality standards for all contaminants in surface waters. Furthermore, the Act made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by non point source pollution.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA):** The Act, commonly known as *Superfund*, was enacted by Congress in 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that my endanger public health or the environment. Over 5 years, $1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites; and established a trust fund to provide for clean-up when no responsible party could be identified.

**POLLUTION PREVENTION ACT (PPA):** Although the Act concerns hazardous wastes in particularly, it encourages the source reduction of all waste types. Basically, the preferred method of preventing pollution is to reduce at the source the volume of waste generated and that reuse should be performed whenever possible.

**RESOURCE CONSERVATION AND RECOVERY ACT (RCRA):** The Act authorizes EPA to regulate hazardous waste generation, transportation, storage, treatment, and disposal. It also sets forth a framework for the management of non-hazardous solid waste. Amendments to RCRA in 1986 also authorized EPA to address environmental problems arising from underground storage tanks storing petroleum and other hazardous substances.

**Subtitle C** - The hazardous waste section of RCRA
**Subtitle D** - The solid, non-hazardous waste section of RCRA

**TOXIC SUBSTANCES CONTROL ACT (TSCA):** The Act, passed by Congress in 1976, requires that all chemicals produced or imported into the United States be tested, regulated, and screened for toxic effects. The Act requires that any chemical that reaches the consumer market be tested for possible toxic effects prior to commercial manufacture. Existing chemicals that pose health and environmental hazards are tracked and reported under TSCA. The management and disposal of asbestos and polychlorinated biphenyls (PCBs) are regulated under the Act.

**SAFE DRINKING WATER ACT (SDWA):** The Act is the main federal law that ensures the quality of drinking water. Under the Act, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers that implement those standards.

Developing a Tribal Integrated Waste Management Plan (IWMP)

# Overview of Developing a Tribal IWMP

## SERIES AT A GLANCE

**Overview-** Developing a Tribal IWMP

▪

**Step 1-** Collect Background Data

▪

**Step 2-** Map Out the Tribal IWMP Framework

▪

**Step 3-** Write and Implement the Tribal IWMP

**DEVELOPING AN IWMP MAY LOWER TOTAL OPERATING COSTS, INCREASE EFFICIENCY, REDUCE THE USE OF OPEN DUMPS, AND INCREASE ENVIRONMENTAL AWARENESS AMONG COMMUNITY MEMBERS.**

## Purpose

This Overview Fact Sheet is the first in a series of four that will provide the basic framework for a tribal solid waste and environmental manager to develop a successful integrated waste management plan. The purpose of developing a tribal Integrated Waste Management Plan (IWMP) is to identify existing solid waste systems, assess needs, and set forth ways to design, implement, and monitor a more effective and sustainable solid waste management program. The final IWMP put forth to your governing body for approval will outline various aspects of waste management such as the collection, storage, and disposal of waste; source reduction; recycling; composting; facility management; and budgeting and financing. Developing a useful IWMP may lower total operating costs, increase efficiency, reduce the use of open dumps, and increase environmental awareness among tribal community members and leaders.

## Framework

The framework for developing an IWMP is broken down into the following three steps:

- ✔ Step 1 – Collect Background Data
- ✔ Step 2 – Map Out the Tribal IWMP Framework
- ✔ Step 3 – Write & Implement the Tribal IWMP

These three steps will include the following actions:

- ✔ Determining the community service area
- ✔ Conducting waste characterization and assessment
- ✔ Describing current and future waste management practices
- ✔ Identifying waste management challenges
- ✔ Investigating waste management options
- ✔ Determining program costs and performing a cost/benefit analysis
- ✔ Selecting a final option
- ✔ Developing goals and objectives
- ✔ Determining milestones
- ✔ Writing the IWMP
- ✔ Adopting the plan
- ✔ Reviewing, adapting, evaluating and updating the plan

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## The Importance of Public Involvement

Public involvement is essential throughout the development of an IWMP. Public involvement should start with outreach to the surrounding community to gain interest, cultivate awareness, and garner support. The next step is information exchange, which progresses to providing recommendations and agreements. Throughout the public involvement process, stakeholders can become empowered to take action, participate in, and/or help support the decision making process.

Each aspect of public involvement is pertinent to developing and implementing a successful IWMP. Tribal community members are more likely to support and participate in new waste management programs when they are involved in the planning process from the very beginning. EPA's Public Involvement Web site, **www.epa.gov/publicinvolvement/intro.htm**, provides an overview on how EPA conducts public involvement activities that may be beneficial to your tribe.

## Suggested On-line Resources for Developing a Tribal IWMP

### EPA Waste Website

**www.epa.gov/waste**

General information on a variety of topics concerning the types and amounts of waste generated in the U.S.; fundamentals of reduce, reuse, and recycling concepts; tips on handling hazardous waste; and how to reduce, manage, and dispose of municipal solid waste or non-hazardous waste.

### *Publications by Topic –* Municipal Solid Waste Website

**www.epa.gov/waste/inforesources/pubs/municipal_sw.htm**

This EPA Website provides a directory of EPA publications that focus on solid waste.

### Respect Our Resources: Prevent Illegal Dumping


**www.epa.gov/waste/wyl/tribal/pdftxt/twj-1.pdf**

Published in May 2002, this edition of the Tribal Waste Journal provides information on community support and outreach activities.

### Solid Waste Management: A Local Challenge with Global Impacts

**www.epa.gov/osw/nonhaz/municipal/pubs/ghg/f02026.pdf**

This 2002 fact sheet discusses how to establish recycling and composting programs; components of waste collection, transport, and various options for waste disposal.

### Tribal Decision-Maker's Guide to Solid Waste Management

**www.epa.gov/waste/wyl/tribal/tribalguide.htm**

This comprehensive document provides resources, tips, tools, and examples on how tribal waste managers can reduce waste; collect fees; and fund, develop, implement, and enforce waste management in their community. Also, included in the document is a section on how to develop an effective outreach and education plan.

### What is an Integrated Waste Management Plan (IWMP)?


**www.epa.gov/wastes/wyl/tribal/pdftxt/twj-7.pdf**

Published in September 2009, this edition of the Tribal Waste Journal provides several articles that range from a general overview on why you should develop an IWMP to specific tribal case studies and examples. Nine types of funding opportunities are profiled in the issue along with tips on how to fund your IWMP. Also included is additional information about tools and programs available to help reduce waste and develop an IWMP.

Developing a Tribal Integrated Waste Management Plan (IWMP)

# Step 1 – Collect Background Data

## OVERVIEW OF STEP 1

Determine the Community Service Area

▪

Conduct Waste Characterization and Assessment

▪

Describe Current and Future Waste Management Practices

▪

Identify Waste Management Challenges

**AS EVERY TRIBE IS UNIQUE, GATHERING BACKGROUND INFORMATION SPECIFIC TO YOUR COMMUNITY IS ESSENTIAL IN DEVELOPING AN IWMP THAT IS GEARED TOWARDS THE NEEDS OF YOUR TRIBE.**

## Determine the Community Service Area

Prior to developing an IWMP, you must first determine the area that will be serviced by the plan – that is, the area that the plan will be focused on. To gain a broad overview of your community service area (CSA) and to determine what waste collection, storage, transfer, and disposal options are best, collect the following pieces of information:

- ✔ **Jurisdictional Boundaries.** Clearly define the reservation boundaries and identify the tribes that live within and just outside the jurisdictional boundaries.
- ✔ **Population and Demographic Data.** Collect past and present population and household information. Consider the age of the population throughout the entire community. Project where and how the population may grow or change over the next 5, 10, 20, and 50 years.
- ✔ **Climate.** Report on the average amount of rainfall, average high and low temperatures, and other climatic features.
- ✔ **Natural Resources, Geological and Geographical Features.** Include the soil type and drainage properties, distance to ground water, and drinking water access.
- ✔ **Economic Data.** Report on the current and potential revenue sources for the tribe; types of commercial, industrial, and other types of employers existing within the reservation; and the community's assets and resources.

To get started, visit the U.S. Census Bureau's website, www.census.gov, for statistical information on populations and households for communities throughout the U.S. More detailed information is provided on 539 tribes based on 2000 data located in the American Indian and Alaska Native Summary File (AIANSF). Also, your tribal housing office or local Housing and Urban Development office may have specific information on your CSA.

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## Conduct Waste Characterization and Assessment

Collecting information on your CSA's waste streams will help you determine the current waste composition and provide a baseline for further analysis. First, examine existing solid waste records, perform a walk-through of current waste management operations, and/or sort through the current waste stream to determine the composition of waste generated. Keep in mind the following:

- ✔ What is the current amount of waste generated from all of the different sectors within your CSA? The different sectors may include tribal government operations, commercial businesses, household waste, waste generated from schools on the reservation, etc.
- ✔ What types of waste streams does each of these sectors produce? For example, recyclable materials (e.g., paper, glass, plastic); compostable materials (e.g., food scraps, organic debris); household hazardous waste (e.g., paint, batteries); construction and demolition debris; abandoned vehicles; used tires; white goods (e.g., refrigerators); and electronic waste (e.g., computers).

For more information on conducting waste assessments, visit EPA's Waste Assessment Approaches website, **www.epa.gov/osw/partnerships/wastewise/approach.htm**. This website provides information on how to conduct a waste assessment including records examinations, facility walk-throughs, and waste sorts.

## Describe Current and Future Waste Management Practices

Consider how each waste stream is managed based on the waste characterization and assessment of your CSA. Collect the following information on current waste management practices:

- ✔ Waste collection, transfer, and disposal
- ✔ Waste reduction practices
- ✔ Waste disposal facility description
- ✔ Regional waste infrastructure
- ✔ Current partnerships
- ✔ Compliance and enforcement issues

Consider the strengths and weaknesses of your existing waste management program and collect the following information needed to develop a comprehensive, forward-thinking, IWMP:

- ✔ Equipment and facility needs
- ✔ Funding limitations
- ✔ Projected population changes and changes in waste characterization
- ✔ Proposed partnerships
- ✔ Research on alternative waste management options

The second chapter of the Tribal Decision-Maker's Guide provides an example of how to estimate future waste generation based on population growth and current waste generation rate. Issue 7 of the Tribal Waste Journal provides information on how to handle household and commercial waste, as well as special waste streams such as batteries and medical waste. To obtain these resources and others, go to the Publications link on EPA's Waste Management in Indian Country website at **www.epa.gov/waste/wyl/tribal/index.htm**.

## Identify Waste Management Challenges

After addressing current and future waste management practices, determine what challenges exist (e.g., missing infrastructure, location, cost, etc.). Once you understand the existing waste management challenges for your CSA, you will be able to address these issues as you move forward with the development of the IWMP in Step 2.

Developing a Tribal Integrated Waste Management Plan (IWMP)

# Step 2 – Map Out the Tribal IWMP Framework

## OVERVIEW OF STEP 2

Investigate Alternative Waste Management Options

▪

Determine Program Costs & Perform a Cost Analysis

▪

Select a Final Option

**IN STEP 2 OF DEVELOPING AN IWMP, YOU CAN BEGIN TO MAP OUT THE FRAMEWORK, WHILE KEEPING IN MIND THE BACKGROUND DATA IDENTIFIED IN STEP 1.**

## Investigate Waste Management Options

Using the data obtained in Step 1, investigate which waste management options would work best for your tribe. In considering waste management options, also consider long-term goals for your tribe, such as encouraging reuse and recycling. These are different from the goals of a specific waste management option as will be discussed in Step 3 of this IWMP. Long-term goals also provide the priorities for your tribe and the criteria to compare waste management options. They include:

- ✔ Environmental impacts
- ✔ Relative cost
- ✔ Potential to create jobs in the tribe
- ✔ Operation and maintenance challenges
- ✔ Regulatory requirements
- ✔ Degree of tribal control
- ✔ Cost of closure, post-closure care, and financial assurance for municipal landfills

In light of your tribe's goals and priorities, start developing relevant waste management options. However, it is important not to exclude options too quickly. Consider creating partnerships with states, surrounding local

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governments, and/or other tribes, to increase waste management options. Some common waste management options include:

- ✔ Source reduction, such as the Pay-As-You-Throw Program, encourages participants to generate less trash through a monetary incentive program. For more information on Pay-As-You-Throw, visit **www.epa.gov/waste/conserve/tools/payt**
- ✔ Reusing goods or donating goods such as lightly used clothing and furniture to a community organization for reuse
- ✔ Recycling products such as aluminum, paper, and plastic
- ✔ Composting organic material, including yard debris and food scraps. The compost that is produced can be used as a soil amendment

For more information on developing partnerships, check out EPA's Partnerships in Solid Waste Management document at: **www.epa.gov/waste/wyl/tribal/pdftxt/partner.pdf**. This document provides information on the benefits, potential obstacles, and an overview on how to develop a partnership agreement. Consider partnering with other inter-tribal departments, neighboring tribes and local communities, the county and state governments, businesses, non-profit organizations, and/or educational centers in and around your community.

## Determine Program Costs & Perform a Cost Analysis

Conduct a preliminary cost analysis of waste management, including the capital and operational cost estimates. Estimate how much time is required to implement the different options such as developing, building, and designing a new facility or developing a curb-side pickup program. Determine the potential costs of the new waste management program.

Examples of waste management costs include:

- ✔ Facility design and construction
- ✔ Equipment purchases
- ✔ Cleanup
- ✔ Operation and maintenance
- ✔ Personnel training and administration
- ✔ Landfill closure and post-closure care
- ✔ Supplies

For more information on developing a cost estimate, review Chapter 2 of the Tribal Decision-Maker's Guide, available by going to the Publications link on EPA's Waste Management in Indian Country Web site at **www.epa.gov/tribalmsw**. The Tribal Solid Waste Program Costing Tool, available from EPA Region 9 at **www.epa.gov/region9/waste/tribal/pdf/Tribal-Solid-Waste-Program-Costing-Tool.pdf** provides an easy-to-use work book for determining the feasibility of tribally-operated collection services, transfer stations, and landfills.

## Select a Final Option

Once you have gathered and assessed your waste management alternatives, select a final option to be put forth in the final IWMP, created in Step 3.

Developing a Tribal Integrated Waste Management Plan (IWMP)

# Step 3 – Write and Implement the Tribal IWMP

## OVERVIEW OF STEP 3

Develop Goals and Objectives

▪

Determine Milestones

▪

Write the Tribal IWMP

▪

Adopt the IWMP

▪

Plan Review, Adaption, Evaluation, & Updates

**STEP 3 INCORPORATES THE INFORMATION OBTAINED IN STEPS 1 AND 2, AND PULLS EVERYTHING TOGETHER INTO ONE COMPREHENSIVE DOCUMENT. THIS IWMP DOCUMENT IS NOW READY TO BE PUT FORTH TO THE APPROPRIATE GOVERNING BODY FOR APPROVAL AND IMPLEMENTATION.**

## Develop Goals and Objectives

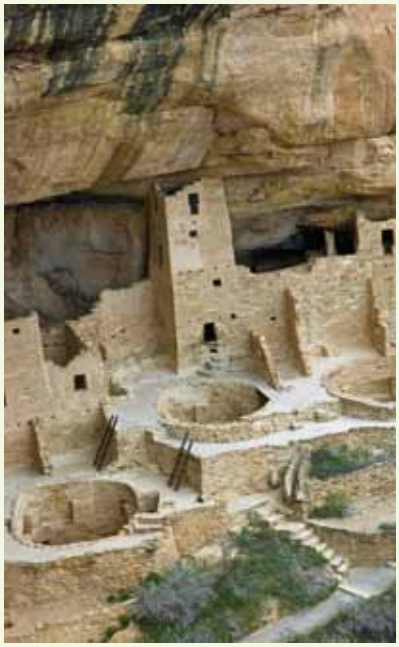
Based on the final option selected in Step 2, develop a goal statement for each issue and/or proposed improvement. A goal statement is a specific description of what needs to be done. Develop actions to accomplish this goal. Actions may be over a pre-determined time frame (i.e., 5, 10, 15 years, etc.).

To find out more information on developing goals and objectives, look at Issue 7 of the Tribal Waste Journal. This issue provides information on how to develop goals for your IWMP, funding opportunities, an IWMP template, examples, and various other educational tools. Issues of the Tribal Waste Journal may be found by going to the Publications link on EPA's Waste Management in Indian Country website at **www.epa.gov/tribalmsw.**

## Determine Milestones

Milestones enable you to assess your accomplishments and to focus on what you consider a priority in dealing with waste management challenges. Determining milestones will provide the framework essential in implementing the plan once it has been approved. Identify the following:

- ✔ Major tasks and sub-tasks
- ✔ Target dates for completion of specific tasks
- ✔ Anticipated costs and potential funding sources
- ✔ Potential partners for implementing the plan



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## Write the Tribal IWMP

Take the information collected in Steps 1, 2, and 3 and incorporate it within a single document. Your IWMP should include the following key elements:

- ✔ Description of the community service area
- ✔ Description of the tribe's waste management program structure and administration
- ✔ Description of the tribe's current and proposed waste management practices
- ✔ Description of the funding, sustainability, milestones and long-term goals of the tribe's waste management program
- ✔ Documentation of the IWMP being approved by the appropriate governing body

Issue 7 of the Tribal Waste Journal provides examples of templates used when writing an IWMP. Past issues of the Tribal Waste Journal may be found under the Publications link on EPA's Waste Management in Indian Country website at **www.epa.gov/tribalmsw**. Case studies on successful solid waste management programs may be found under the Case Studies link under the same website.

## Adopt the IWMP

The plan should be put forth to the appropriate governing body once it has been drafted, edited, and fully reviewed by all appropriate parties. Once the IWMP has been adopted, begin to implement the plan by aiming to reach the goals and milestones laid out at the beginning of Step 3.

## Plan Review, Adaption, Evaluation, & Updates

As you begin to implement your new IWMP, assess the goals, objectives, and milestones over time to ensure that they are feasible. Solicit feedback from residents and other stakeholders to determine if the new IWMP and waste management alternatives adopted are the best fit for your tribe. Evaluate the IWMP as needed, at a minimum of every 5 years, or as population shifts or different waste streams are generated.

## Why Develop an IWMP?

An Integrated Waste Management Plan (IWMP) is the blueprint of a comprehensive waste management program. A successful IWMP can effectively lower total operating costs, increase efficiency, reduce the use of open dumps, and improve protection of human health and the environment.

An IWMP is a practical document that provides the information and guidance needed to make critical waste management decisions. The plan also identifies alternatives for managing waste and the resources needed to implement a waste management program.

## What Activities Are Covered by an IWMP?

An IWMP addresses a range of solid and hazardous waste management activities including: waste prevention, waste collection, materials reuse, recycling, composting, and household hazardous waste disposal.

The three steps outlined in this brochure provide a general overview of the components needed to develop an IWMP.

Visit EPA's Waste Management in Indian Country Web site at www.epa.gov/tribalmsw for more information on tribal solid waste management including grants/funding, education, and relevant publications.

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# 3 Steps to Developing a Tribal Integrated Waste Management Plan (IWMP)

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## STEP 1. Collect Background Data

**Determine the Community Service Area.** Collect information on population, households, climate, geography, economy, and natural resources. Determine how and where the tribal population will grow in the next 5, 10, 20, and 50 years.

**Conduct Waste Characterization and Assessment.** Evaluate the current waste stream composition to assess how much residential, commercial, institutional, industrial, and agricultural waste is generated.

**Describe Current and Future Waste Management Practices.** Inventory existing equipment, personnel, and facilities. Outline current waste management practices (i.e., waste collection, storage and disposal), operating procedures, codes, and any type of enforcement authorities or actions. Determine if the waste management program is sufficient to handle the amount of waste generated now and in the future.

**Identify Waste Management Challenges.** Challenges may include: insufficient infrastructure, transportation costs, illegal open dumps, waste generators, transfer station location and operating costs. Ask residents what they find to be the most significant waste management challenges.

## STEP 2. Map Out the Tribal IWMP Framework

**Investigate Waste Management Alternatives.** Using the data obtained in Step 1, assess waste management policies and develop alternatives for collection, storage, transferring, reduction, recycling, composting, and disposal. Consider how neighboring tribes, counties, or other jurisdictions operate and fund their waste management programs.

**Determine Program Costs & Perform a Cost/Benefit Analysis.** Based on the alternatives being considered, conduct a preliminary cost analysis that includes capital and operational cost estimates and estimate how much time is required to implement the different options such as developing, building, and designing a new facility or developing a curb-side pickup program. Include cost-effectiveness and an economic assessment of each system.

**Select a Final Alternative Option.** Determine what option will be the most economically, socially, and environmentally feasible for your tribe based on Steps 1 and 2.

## STEP 3. Write & Implement the Tribal IWMP

**Develop Goals and Objectives.** Based on the option selected in Step 2, establish overall goals and objectives by analyzing issues and evaluating demographic, geographic, and waste data. These will serve as a guide for developing the plan and for resolving future/unforeseen issues. Develop short and long-term goals, keeping in mind future demographic changes.

**Determine Milestones.** Provide the framework for implementing the plan. Specify partners, major tasks, target dates, anticipated costs, and funding sources.

**Write the Tribal IWMP.** Include the information obtained in Steps 1 and 2 along with the description of the funding, long-term goals, and how the IWMP will ensure sustainability.

**Plan Adoption.** Document the approval of the IWMP by the appropriate governing body.

**Plan Review, Adaption, Evaluation, & Updates.** Review and adapt the plan to meet any new waste codes, technologies, political environments and other changing conditions. Evaluate the success of the plan based on the goals, objectives, and milestones created. Update or amend your tribal IWMP every one to five years, or as needed.

## The Role of Public Involvement

The success of a waste management plan largely depends on public involvement and support. Involve the community early and often in the planning process. It is important to identify a lead agency/person, define roles and responsibilities, and identify partners who can provide assistance in developing and implementing the plan at the beginning of the process. Throughout the entire process, engage the entire community – schools, businesses, elders, and children – through education, soliciting ideas and receiving feedback.


# Tribal Integrated Waste Management Plan

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# Chapter 1
# Introduction

**Purpose of Integrated Waste Management Plan**

This plan has been prepared by the **Confederated Tribes of the Coos, Lower Umpqua & Siuslaw** as a guide to develop and implement an effective integrated waste management program specific to the tribe's needs. The Plan will assist the Tribes with making decisions to improve the lands, air, water, and cultural resources in the Tribes' Ancestral Territory for future generations. This plan includes the identification of existing waste systems and waste reduction strategies, implementation, monitoring and outreach methods.

**Federal, State, and Other Agencies Involved**

The United States has a unique legal relationship with Tribal governments based on specific constitution, treaties, statutes, executive orders, and court decisions. Under the American legal system, Indian tribes have sovereign powers separate and independent from the federal and state governments. This means that Tribal governments have the same powers as the federal and state governments to regulate their internal affairs, with a few exceptions. For instance, tribes have the power to form a government, to decide their own membership, the right to regulate property, the right to maintain law and order, the right to regulate commerce, and so on.

Because of the unique nature of Tribal sovereignty and specific federal legislation recognition, various governmental agencies are involved in assisting Indian tribes. Agencies assisting tribes with solid waste management needs and concerns are listed in Appendix A.

**Pertinent Laws & Regulations**

Native American tribes play an increasingly critical role in regulating the environment on Indian lands. *Although tribes are increasing their own regulatory authority, the EPA retains jurisdiction over all pollution sources until a program has been delegated to the tribe*. Indian tribes must qualify for the "delegation" of a program under the various environmental protection laws administered by the EPA. A list of Federal laws and regulations concerning solid waste management issues is included in Appendix A.

State power over activities on Indian reservations generally is narrow. Although tribes are required to follow federal laws and regulations, tribes may incorporate state laws and regulations (when applicable) when addressing environmental issues generally at their own discretion. There is potential for overlap and conflict among tribal, state, and federal regulations.

**Tribal Statements and Waste Management Goals**

"As a sovereign nation, we honor and look to our ancestors thousands of years of experience on the land, as we guide the Tribes forward for the next seven generations; promoting healthy, successful families; affirming and nurturing our culture, acknowledging our responsibility to the land and the Tribal community."

"The Confederated Tribes have had continuous government of, by, and for the Tribes since Time Immemorial…The Confederated Tribes has the rights and responsibilities of any government to its people and their resources. To this end, the Department of Natural Resources was established to conserve and manage resources on Tribally-held lands and to work with other governments to influence conservation and management of resources throughout the Tribes' Ancestral Territory."

This integrated waste management plan has been developed to provide the tribal decision makers and

members with a set of goals and policies to implement, monitor and evaluate future waste management activities. Based on the mission of the Tribes and the Department of Natural Resources, the following goals and objectives for the Integrated Waste Management Plan have been adopted:

- Maintain and improve Tribal environmental quality
- To complete and update a Tribal Integrated Waste Management Plan that outlines an appropriate balance of waste prevention, reuse, recycling, and disposal.
- Meet waste disposal and recycling needs for Tribal facilities and reduce waste generation
- Develop a waste hierarchy of waste reduction, recycling, composting, and disposal
- Ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes (household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc)
- Evaluate cost effectiveness of implementing Tribal Integrated Waste Management Plan
- Develop Tribal Code respective to management and enforcement of an Integrated Waste Management Plan

*Current objectives:*

- Establish a cost effective and efficient system for managing the Integrated Waste Management Plan
- Obtain funding for expanding waste management services, outreach, and/or facilities.
- Provide easily available and convenient recycling information and/or opportunities and access for Tribal members, Tribal housing, and Tribal government.
- Educate and involve citizens in waste reduction, recycling efforts, and responsible waste management.
- Promote collection services that balance administrative efficiency, cost effectiveness and aesthetics.
- Utilize to the fullest extent possible existing facilities and systems.
- Manage the system to protect public health and the environment.
- Ensure that special wastes are handled, recycled or disposed of in a safe manner.

*Future Objectives:*

- To improve efficiency, quality, and coverage of waste systems at Tribal government and housing facilities.
- Further promote waste reduction, reuse, and recycling as preferred long-term strategies for reducing the amount of waste disposed in landfills
- Provide additional waste management services and facilities as the need arises.
- Address and support strong enforcement of waste issues.
- Take advantage of alternatives for yard and wood waste and other potentially recyclable materials.
- Work with the Tribal enterprises to reduce waste, improve recycling and integrate composting.
- Continue outreach for reduction of toxic materials in landfill.
- Support environmentally sound waste disposal alternatives for Tribal members.

**Description of Lands and Ancestral Lands**

The lands of the CTCLUSI Ancestral Territory, encompasses 1.6 million acres of lands at or adjacent to the Pacific Ocean. The landscape ranges from beaches to coastal lakes to rivers to dunes and forests. The area remains relatively low in population density and contains some of North America's most extensive forests. The region contains a diversity of natural resources for industries such as mining, logging, fishing, agriculture, and tourism.

This section contains a general description of the existing land use of the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Ancestral and Tribal lands. Tribal lands range from urban to rural. Urban areas include the cities Coos Bay, Reedsport, Florence located near the mouth of the Coos, Umpqua and Siuslaw Rivers (respectively). Table 1-3 contains a breakdown of land use on the various Tribal lands.

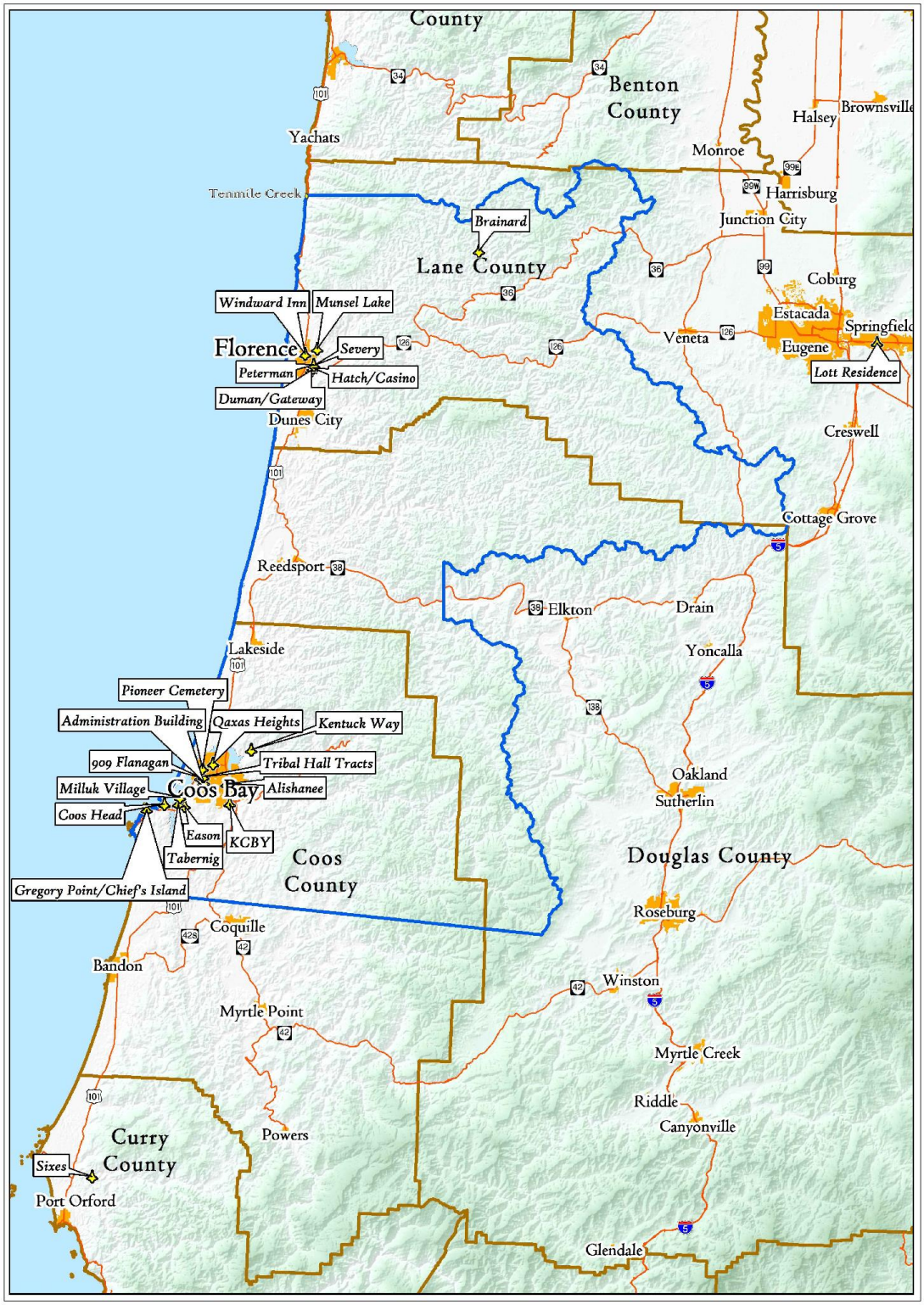
This section of the plan includes a general description of the land use on the reservation, including geography, rural vs. urban nature, and land use types. For this section, the following information should be included:

- General location of development (north, south, east and west)
- General location of rural areas (north, south, east and west)

**Land use on CTCLUSI Tribal land (also see map next page)**

| Land use | Tribal parcel |
|---|---|
| Casino/Revenue | Hatch, Ocean Dunes |
| Cultural use/ Lots | Empire (Tribal Hall and Tribal Community Center), Baldich, Flanagan Pioneer Cemetery, Drew Cemetery, Munsel Lake, Miluk Villlage, Kentuck way, Eason, Sixes River, Brainard, Severy, |
| CTCLUSI Offices | CTCLUSI Administration Offices (Elks), Florence Outreach office (Windward), |
| Residential Use | California and Connecticut (Qaxas), Hatch (Kaich) |
| Industrial/ Mixed Use/Other | Alishanee, Kentuck Slough, Coos Head |

Note: Table 1-3 is not a comprehensive list. A comprehensive list may be sought through the CTCLUSI through the Department of Natural Resources' Realty Program.




Properties of the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians

Tribal Property
Ancestral Boundary
Highway
County
City

0 4.5 9 13.5 18 Miles

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This data is for display purposes only. No liability is assumed as to the data delineated hereon.

# Chapter 2

# Waste Characterization

**TRIBAL POPULATION**

The total population of CTCLUSI in 2013 is 1051 based on current enrollment records. The table below indicates the breakdown of the current population residing on the identified land use.

**Adult Population and Land Use**

| TOTAL ENROLLMENT (ADULTS) | TRIBAL HOUSING | NEAR TO ADMIN SERVICES* | NOT DEFINED |
|---|---|---|---|
| 727 | 35 | 294 | 398 |

***near to administration services is defined as adults residing in Lane (134), Coos (136), or Douglas (24) counties**

**Existing Systems Overview**

The existing numbers of members residing on CTCLUSI Tribal lands are 35. Tribal housing residents have garbage and recycling costs paid for by the Tribe.

The majority of waste originating from a Tribal household or government facility (Florence Outreach) or enterprise in the Florence area is collected by Central Coast Disposal or transported for disposal to Florence Transfer Station (see Chapter 3 for more information). The waste from the Eugene/Springfield Outreach waste and recycling is collected by a contractor and transported for disposal or recycling. The majority of waste and recycling originating from a Tribal households (Qaxes Heights), government facilities (Administration Offices) or enterprises in Coos county, is collected by Les County Sanitary and transported for disposal or recycling.

The year-round adult population of the Tribal members is 727; however, CTCLUSI tribe operates the Three Rivers Casino and Hotel and Ocean Dunes golf course located in Florence, Oregon, attract visitors from outside the reservation. As the Integrated Waste Management Program continues to develop, CTCLUSI should strive to better understand and assist the casino and golf course with waste reduction methods and disposal options for these enterprises.

**Annual Waste Generation**

The calculated waste generation per day per person living in the United States in 2011, based on EPA Municipal Solid Waste webpage[1], was 4.40 pounds and recycling accounted for 1.53 pounds. Using this formula and assuming that Tribal membership acts similarly to the typical US population, the annual waste produced by the Tribe is 1,167,562 pounds.

**Population and Solid Waste Generation Projections**

| YEAR | POPULATION | ESTIMATED WASTE GENERATED ANNUALLY (LB) |
|---|---|---|
| **2013** | 727 | 1,167,562 |

1 http://www.epa.gov/epawaste/nonhaz/municipal/index.htm

# Chapter 3

# Waste Systems Available

## WASTE COLLECTION AND DISPOSAL GOALS

This chapter presents a description of the existing waste system utilized by CTCLUSI government offices and Tribal housing.

Waste collection systems will be evaluated for their ability to meet existing and projected needs within the framework of the following goals:

- Meet waste disposal and recycling needs for Tribal facilities
- Develop a waste hierarchy of waste reduction, recycling, composting, disposal and incineration
- Ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes (household hazardous waste, ash, sludge, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc)
- Evaluate cost effectiveness of implemented Integrated Waste Management Plan
- Develop Tribal Code respective to management and enforcement of Integrated Waste Management Plan

These goals were developed to address waste collection needs for CTCLUSI and are derived from the overall Tribal Integrated Waste Management Plan goals identified in ***Chapter 1***.

### Collection

***Currently Tribal government and Tribal Housing waste is collected by Les County Sanitary, in Coos county, and Central Coast Disposal, in Lane County, depending on the location of the Tribal facility. Waste collected is paid for through Indirect funding (account code 7260).***

- Due to lack of funding resources, CTCLUSI will not pursue the option of operating a waste collection facility for waste disposal or recycling
- Tribal members living off Tribal lands are advised to take their recycling to appropriate recycling facilities, such as transfer stations.
- Although there is no recycling facility on CTCLUSI lands, educating Tribal members and Tribal Administration that taking appropriate recyclable materials to transfer stations will help reduce costs for waste disposal and assist in protecting environmental quality and Tribal cultural resources

## EXISTING FACILITIES FOR GARBAGE AND RECYCLING IN COOS, DOUGLAS, AND LANE COUNTIES

### Transfer Stations and Landfills near to Tribal Lands

Coos County (See Appendix B-1)

- Transfer Stations
  - Beaver Hill Disposal Site and West Coast Recycling and Transfer Station (private business)
- Landfill
  - Beaver Hill Disposal Site

Douglas County (See Appendix B-2)

- Transfer Stations
  - Roseburg. Glide, Reedsport, Canyonville, Myrtle Creek, Yoncalla, Glendale, camas Valley,

Elkton, and Tiller

- Landfill
  - Roseburg Landfill

Lane County (See Appendix B-3)

- Transfer Stations
  - Cottage Grove, Creswell, Florence, London, Low Pass, Mapleton, Marcola, McKenzie Bridge, Oakridge, Rattlesnake, Sharps Creek, Swisshome, Veneta, Vida, Walton
- Landfill
  - Short Mountain

**Transfer Facilities**

*Coos, Douglas, and Lane county transfer stations have recycling facilities on the premises. A general list of permitted and non-permissible recyclables is listed in Chapter 4 table 4-1. Use Table 4-1 as a guide and please contact your local Transfer station to confirm if an item is recyclable (please see the Appendix listed above for phone or location information)*

**For more info on recycling in the five county Tribal service areas see Chapter 4 or see the url below**

| County | url |
|---|---|
| Coos county | http://www.co.coos.or.us/Departments/SolidWaste.aspx |
| Douglas county | http://www.recyclepower.org/default.asp |
| Lane county | http://www.lanecounty.org/DEPARTMENTS/PW/WMD/Pages/default.aspx |
| Lincoln county | http://www.co.lincoln.or.us/solidwaste/ |
| Curry county | no url available at this time |
| Other counties in OR | http://www.deq.state.or.us/lq/sw/contacts.htm |

**Compost Facilities**

*Currently composting is not available at transfer stations. Tribal government does not provide composting services for the government or housing facilities. For information about composting see Appendix D.*

**ILLEGAL DUMPING**

People observing illegal dumping of waste (the action, the presence of improper materials in collection containers, or waste materials dumped in inappropriate locations) on the reservation's property are to notify ***Tribal Police at 541-997-6011 or any of the Tribal Police Officers.***

**Actions for Cleanup**

To successfully deal with illegal dumping problems, the CTCLSUI has implemented a limited approach for dealing with Cleanup that includes:

- Community Outreach
- Site Cleanup and Monitoring

**Community Outreach**

Educating tribal members, visitors, and the surrounding community members about how proper waste disposal will help limit future illegal dumping incidents. Tribal members are more likely to support waste management programs if they understand the new waste disposal options and the dangers of open and illegal dumping.

The following measures will be implemented by CTCLUSI to educate tribal members on new waste disposal options and the dangers of open and illegal dumping.

- Tribal Integrated Waste management Plan will be posted on the CTCLUSI website
- A flyer or pamphlet will be produced that reflects the Tribes views of waste management, illegal dumping and trash burning. The flyer or pamphlet will provide resources to Tribal members such as waste disposal sites and contact information for illegal dumping sightings. This material would be available at Tribal Offices and on the CTLCUSI website.
- Contact information regarding illegal dumping reporting will be available on the CTCLUSI website.

**Site Cleanup and Monitoring**

Site cleanup and monitoring includes planning, budgeting, and implementing monitoring and cleanup projects at current sites and monitoring of these sites for illegal dumping activity and efforts to prevent future illegal dumping. Proper planning is a key element in the success of monitoring and cleanup efforts. CTCLUSI will organize collaborative efforts between Maintenance, Natural Resources and Tribal Police departments to budget, plan and implement monitoring and cleanup activities.

Monitoring of cleaned up sites is crucial to eliminating the occurrence of illegal dumping. When funding permits, signs will be posted along with fencing, landscaping or other barriers to limit site access and discourage future dumping at the site. Standard adhesive backed “decals” warning of the prohibition against and the intent to prosecute unauthorized users could be made available if indirect funding is available.

**Surveillance & Control Program**

Once policies are in place for actions addressing illegal dumping, program enforcement and measurement are needed for evaluation of how policies are working.

## Enforcement

The establishment of tribal codes, ordinances, and regulations related to proper disposal of waste materials are the foundation for enforcement actions against illegal dumping and set the stage for strong support from tribal council members. Beyond that, support is needed to remind tribal members, visitors, and the local community that illegal dumping is prohibited and Tribal Police are available if active illegal dumping is occurring.

CTCLSUI will implement the following enforcement measures as deterrents for illegal dumping.

- ***Tribal resolution that supports the Tribal Integrated Waste Management Plan***
- ***Collaboration of the Natural Resources, Maintenance, an Police departments to implement and update the Tribal Integrated Waste Management Plan***
- ***Development of outreach materials for Tribal members with background information and key points of contact***

**Program Measurement**

Integral to any program is measurement of effectiveness. CTCLUSI will implement the following methods to measure the effectiveness of deterrents to illegal dumping.

- ***Record of illegal dumping activities***
- ***Annually review accounts of illegal dumping***

**Resources**

CTCLUSI will promote resources for hazardous waste disposal and community clean-up events.

- ***See Chapter 5***
  - *Example of community hazardous waste clean-up event: http://www.ci.florence.or.us/publicworks/household-hazardous-waste-round*WASTE

**SYSTEMS NEEDS**

Based on the review of the existing systems used by Tribal housing and Tribal government, and systems employed independently by Tribal membership, CTCLUSI has identified a potential waste management strategy designed to build upon the existing waste and recycling management systems and facilities. The needs are also based on the goals and objectives stated in ***Chapter 1*** of this Plan, and how best to achieve these goals.

***A key component of a strong Tribal Integrated Waste Management Program is utilizing a collection and disposal system that is compatible with the existing and future needs of the tribe.***

An evaluation of the estimated annual operating costs for waste operations was prepared (see table next page).

**ESTIMATED ANNUAL OPERATING COSTS FOR WASTE MANAGEMENT FOR CTCLUSI**

| | |
|---|---|
| **Existing CTCLUSI Waste Management collection:** | |
| Administration & Outreach | $ 9400 annual estimate[2] |
| Housing | $ 9050 annual estimate[3] |
| ***Expansion of CTCLUSI Waste Management:** | |
| Collection events | $ 8000 annually[4] |
| Natural Resource | $ 2000 annually[5] |
| Maintenance | $ 2400 annually[6] |
| Enforcement | $ 2000 annually[7] |

*Expansion of CTCLUSI Waste Management can be assessed based on availability funding through grants or the Tribal General Fund.

***Decisions about what materials to collect, as well as the costs and methods to collect, transport, and ultimately dispose of waste materials are all interrelated.***

2 Approximate; taken from 2014 draft budget
3 Information from Tribal housing department 2013
4 No collection events currently take place. Cost based on personal communication with Lane County Special Waste Dept 11/06/13 MC
5 Estimate based on workload per month (7)
6 Estimate based on workload per month (20)
7 Estimate based on workload per month (7)

# Chapter 4

# Recycling

Recycling turns materials that would otherwise become waste back into valuable resources. Collection of recyclables is just the first step in a series of actions that generate a host of financial, environmental, and societal returns. There are several key benefits to recycling, including:

- **Reduces emissions of many greenhouse gases and water pollutants.**
- **Conserves natural resources such as timber, water, and minerals.**
- **Saves energy, promotes efficiency and money spent on energy**
- **Stimulates the development of more environmentally friendly (greener) technologies.**
- **Reduces the need for new landfills and incinerators.**
- **Improves the quality of the environment and natural resources and is often associated with feelings of pride and accomplishment.**
- **Helps sustain the environment for future generations.**

Recycling not only makes sense from an environmental and natural resource standpoint, but also makes good financial sense. Many products are can be made with less cost. For example, creating aluminum cans from recycled aluminum is far less energy-intensive, and less costly, than mining the raw materials and manufacturing new cans from scratch.

Recycling rates can be estimated by using the information on waste production and recycling in Chapter 2. Using this calculation, it can be estimated that the Tribes produce 405,993 pounds of recyclable materials. It is unknown what the ratio of these recyclable materials are added into the waste stream or if they are recycled.

**Recycling facilities**

***Tribal Government and Tribal Housing currently contract out waste/garbage services that include comingled and glass recycling. Counties and local garbage collections generally offer recycling of comingled recycling and glass; often oil recycling will also be offered. Typically recycling is offered at no additional collection cost and is free at transfer stations. By reducing volume of waste, recycling offers an effective way to reduce overall costs of waste disposal for individuals and business. Reducing waste aligns with the mission of the Tribes' Department of Natural Resources to conserve, protect, and restore the natural resources of the Confederated Tribes' Ancestral Territory.***

**IDENTIFICATION OF RECYCLABLE MATERIALS**

Recyclable materials were identified and separated into three tiers using the following criteria:

**Tier 1:** Local Facilities were identified for all Tribal Service counties[8], materials are readily accepted, most recyclable materials fall into this category.

**Tier 2:** Materials that can be recycled, but for which there are limitations in the locations that may accept these materials or recycling may only be offered for a limited time. These materials may be dropped off or collected for recycling on an irregular basis, seasonally, at special events, or at selected locations as feasible or necessary.

**Tier 3:** Materials for which recycling may become feasible in the future. Although some facilities do exist in Oregon most do not regularly accept these items.

8 Curry county transfer stations have limited recycling

**TIERED DESIGNATION OF RECYCLABLE MATERIALS**

The identified list of materials by tier is presented below:

**TIERED DESIGNATION OF RECYCLABLE MATERIALS**

| TIER 1: READILY AVALIABLE | TIER 2: LIMITED RECYCLING | TIER 3: LIMITED RECYCLING AVALIABLE |
|---|---|---|
| Comingled Recyclables[9] | Large metal | Non-Vehicle Batteries |
| Glass | Ferrous Metals | Styrofoam |
| Corrugated Cardboard | Motor Oil | See Table 4-2 |
| Yard Debris | Vehicle Batteries | |
| See Table 4-2 | Tires | |
| | See Table 4-2 | |

Permitted and non-permissible recyclables is listed in Table 4-2 and 4-3. Use the tables as a guide and please contact your local Transfer station OR check the recycling appendix to confirm if an item is recyclable.

**Table 4a**

***List of recyclable items***

| | |
|---|---|
| *paper* | newspaper<br>office paper<br>cereal boxes/ other paper food boxes<br>magazines<br>paperback books |
| *cardboard* | corrugated cardboard |
| *plastic* | plastic bottles 1-7<br>cottage cheese/yogurt containers and like<br>NO LIDS |
| *glass* | brown glass bottles<br>green glass bottles<br>clear glass bottles |
| *metal* | Aluminum cans<br>Tin cans |
| *other* | car batteries<br>used motor oil- (disposal site may have limits)<br>metal scraps<br>paint (at some sites)<br>flower pots (at some sites) |

9 Comingled recycling is defined as recyclable plastics, metal cans, and low grade paper; see Chapter 2 definition.

***List of NON-recyclable items*** **Table 4b**

| | |
|---|---|
| *paper* | NO paper towels<br>NO paper plates<br>NO hard bound books |
| *plastic* | NO styrofoam<br>NO plastic take out containers<br>**NO plastic bags**<br>NO plastic cups, plates, utensils<br>NO bubble wrap<br>NO prescription vials<br>NO plastic trays (bakery, meat etc)<br>NO plastic lids<br>NO grocery "clamshells" like ones for berries or cherry tomatoes<br>NO plastic toxic containers (antifreeze, oil, syringe, etc) |
| *glass* | NO dishes<br>NO pyrex<br>NO light bulbs<br>NO mirrors<br>NO windows<br>NO drinking glasses |
| *other* | NO greasy metal<br>NO plastics with food residue<br>NO sharp metal<br>NO needles or syringes<br>NO metal toxic containers (antifreeze, oil, syringe, etc)<br>NO Hazardous materials |

**RECYCLING RECOMMENDATIONS**

Tribal members are encouraged to take recyclables to a transfer station or recycling center near their residence or business. CTCLUSI will promote recycling events taking place in Coos, Douglas and Lane counties on the CTCLUSI website and/or at Administration and Outreach offices. Please see Appendix and Chapter 3 Transfer facilities and Landfills for existing garbage and recycling facilities.

**COLLECTION**

Tribal Housing Residents are responsible for placing their recyclables at curbside for collection on their assigned days.

Tribal members living outside of Tribal housing must either take their recyclables with their other waste, to appropriate disposal facilities see Chapter 3 or inquire about recycling with their garbage collection provider. While some Tribal members live in remote areas with limited access to disposal or collection facilities, Tribal members are discouraged from burning because of potential health risks and environmental. Additionally

many items are not legal to burn in the state of Oregon[10] or Tribal lands[11]. Tribal members who continue or insist on burning illegal materials or off season are in violation of applicable laws and at risk for citation from local, state, or Tribal police

**RECYCLING GOALS**

The following goals have been adopted by CTCLUSI to enhance recycling.

- ***Meet and improve recycling needs for the Tribal facilities, including housing***
- ***Develop a waste hierarchy of waste reduction, recycling, composting, and disposal***
- ***Develop outreach***

**Improving Recycling Programs**

CTCLUSI has determined that existing recycling programs could be improved by outreach to CTCLUSI Tribal members and Tribal Administration. This would increase the effectiveness of the overall waste management system and potentially reduce costs. The Natural Resources department will work with the Maintenance department and

**Outreach and Community Involvement**

For a recycling program to remain successful, the Natural Resource department must ensure continued awareness of the program including types of materials collected and proper methods to be used for recycling the various materials. Resources to aid in this approach include techniques such as flyers and brochures, workshops, print ads, and presentations. Further information on outreach and education can be found in Chapter 6.

**Program Monitoring**

The recycling coordinator will continually monitor the recycling program to identify any needs or deficiencies and obtain tribal council support to address and manage these areas. Methods the tribe will use for monitoring and evaluating the effectiveness of the recycling program are described below.

10 http://www.deq.state.or.us/aq/burning/openburning/openburn.asp
11 No Tribal Code currently exists for this (11/30/13 MC)

# Chapter 5

# Special Wastes

**SPECIAL WASTES**

Wastes that require special handling or consideration when it enters the waste management system are labeled special waste. These wastes may include, but are not limited to:

- Hazardous Waste (HW)
- Construction and Demolition (C&D) Debris
- Electronic Wastes (E-Waste)
- Tires
- Asbestos Wastes
- Vehicle Fluids
- Petroleum Contaminated Soil
- Medical/Infectious Wastes
- Veterinary Wastes
- Liquid Wastes

As a beginning point for this Tribal Integrated Waste Program, only some of the Special wastes listed above will be addressed in this Chapter.

**HOUSEHOLD HAZARDOUS WASTE**

Examples of Household Hazardous waste:

- **Cleaning Products**: Oven cleaners; drain cleaners; wood and metal cleaners and polishers; toilet cleaners; tub, tile and shower cleaners; bleach; pool/hot tub chemicals
- **Indoor Pesticides**: Flea repellants and shampoos; ant sprays and baits; bug sprays; moth repellents; mouse and rat poisons and bait; houseplant insecticides; cockroach spreads and baits
- **Automotive products**: Motor oil; fuel additives; carburetor and fuel injection cleaners; engine coolant (antifreeze); starter fluids; automotive batteries; transmission and brake fluid; air conditioning refrigerants
- **Workshop/Painting supplies**: Adhesives and glues; furniture/paint strippers; stains and finishes; paint thinners and turpentine; oil or enamel based paint; photographic chemicals; fixatives and other solvents
- **Lawn and Garden Products**: herbicides, insecticides, fungicides/wood preservatives
- **Miscellaneous Flammable Products**: Propane tanks and other compressed gas; gas cylinders; kerosene; home heating oil; diesel fuel; gas/oil mix; lighter fluid
- **Miscellaneous:** Batteries (non-rechargeable lithium ion); mercury thermostats or thermometers; fluorescent light bulbs; florescent

**HHW can harm the environment and human health if it is not properly handled and disposed.**

- **Product Use** – Some pesticides, when used improperly (for example, at high application rates), may enter surface waters and kill aquatic life and contaminate drinking water
- **Product Storage** – Improperly stored products can result in accidental poisonings of children and animals. Similarly, storage of flammable products (solvents, fuels, oil-based paint) in homes may start fires, add to the fuel load of buildings, and endanger firefighter safety

- **Waste Handling** – There have been several reported incidents at waste facilities where collection workers have been injured or endangered as a result of hazardous waste disposal from households. For example, some pool chemicals are highly reactive and can release a poisonous gas. Alternatively, flammable products may ignite inside the collection vehicle or disposal facility
- **Product Disposal** – Many hazardous products, unless segregated and collected separately from other wastes, can damage the environment, including contamination of soil and water, and pollution of air. Environmental damage can occur in several ways, including direct releases to the environment (dumping outside), releases from disposal sites (landfills and incinerators), and releases from wastewater treatment facilities. Used oil dumped on the ground, automotive batteries thrown in a roadside ditch, and herbicides dumped down the storm drain are all examples of direct releases that may harm the environment. Even disposal of some types of HHW in lined landfills can result in environmental damage. For example, mercury disposed of with regular garbage will eventually leach out of the landfill. If collected, the leachate is typically treated on-site or sent to a wastewater treatment facility. In either case, the mercury is eventually released back into the environment.

**Existing Programs**

Household Hazardous Waste (HHW) collection programs ensure hazardous materials are properly handled and sent to facilities designed to treat or dispose of hazardous waste. CTCLUSI does not currently have a HHW collection program. Although, counties throughout Oregon do hold periodic events throughout the year or provide curbside collection for some HHW products like motor oil or batteries. Tribal members and Tribal Administration is encouraged to contact county special or hazardous waste departments to inquire about programs. Tribal Administration will work with counties to get the word out about collection events and post materials on the CTCLUSI website.

**Contracted Services and Agreements**

Many tribes choose to use private contractors for HHW disposal. Contractors hired to manage an HHW collection program are trained in hazardous waste handling and manifesting requirements, and can be available on an as-needed basis. This can be an ideal solution for reservations with periodic collection events which do not require full time staff to manage the program on a year round basis.

**Program Development**

A goal of the CTCLUSI Tribal Integrated Waste Plan is to minimize environmental and health impacts associated with HHW. Efforts will be directed at educating Tribal members and Tribal Administration about the potential hazards of household products, as well as proper handling and disposal methods.

## CONSTRUCTION AND DEMOLITION WASTE

Construction and demolition (C&D) debris is generated by the construction, demolition, and renovation of existing structures, clearing of land, removal or construction of roads and utilities, and other activities that produce bulky wastes. General characteristics, regulatory requirements, landfilling options, and recycling opportunities for C&D debris differ from those for MSW, and therefore, should be managed differently.

Some C&D debris may be classified as hazardous waste because it contains hazardous materials, such as lead or chromium, or has been contaminated by other hazardous waste. Hazardous C&D debris must be disposed of in a hazardous waste landfill. Other toxic materials, such as asbestos and polychlorinated biphenyls (PCBs), must also be managed in accordance with federal regulations, as spelled out by the Toxic Substances Control Act (TSCA).

### C&D Existing Practices

C&D debris is generated from a variety of construction and demolition activities. Sources and representative composition are discussed in this subsection. Depending on the type and amount of activities occurring on a reservation, the amount of C&D debris generated can vary greatly.

Factors affecting quantities of debris generated, collected, and disposed of include the type of construction (i.e., office buildings, recreational facilities, and housing) and the type of project (i.e., new construction, remodeling, renovation, road repair).

CTCLUSI has had a variety of construction projects that have taken place on Tribal lands over the past decade. A few examples of past and current projects are: building a casino and hotel, renovations to Tribal Administration and Outreach offices, renovations of a golf course, and acquisition and clean-up of a government surplus property at Coos Head. CTCLUSI uses private contractors for the disposal C&D debris. Tribal members and contractors must transport all C&D debris off Tribal lands for disposal at county transfer stations and landfills.

***Surveillance and management of contracted services is crucial to confirming proper waste disposal.***

### Program Development

The major potential benefits of C&D debris recycling are to reduce the cost of materials used in construction and to reduce the volume and cost of disposal of waste materials. Other benefits that can be gained through waste management include a more accurate prediction of waste generation rates for building projects, increased revenue from the sale of the recovered materials, and the conservation of valuable natural resources.

CTCLUSI has selected the following options for future considerations and/or implementation:

- ***Development of C&D materials disposal methods for contracted services***
    - Inclusion of methods in Request for Proposals for construction, renovation, or demolition activities contracted by the Tribes
    - Surveillance of contracted disposal services
- ***Development of materials recovery approach that reduces the creation of C&D waste and subsequent costs***

**SCRAP TIRES**

Scrap tires are generated from passenger cars, trucks, or farm equipment when tires are changed because they are worn or damaged. Often scrap tires are accumulated by commercial businesses that sell or change tires. Scrap tire piles are not treated as hazardous waste.

A tire's physical structure, durability, and heat-retaining characteristics make tire stockpiles a potential threat to human health and the environment. The curved shape of a tire allows rainwater to collect and creates an ideal habitat for disease carrying pests such as rodents and mosquitoes. Prone to heat retention, tires in stockpiles also can ignite, creating fires that are difficult to extinguish and can burn for months, generating unhealthy smoke and toxic oils. Illegal tire dumping pollutes ravines, woods, deserts, and empty lots. However, once a tire fire occurs, tires break down into hazardous compounds including gases, heavy metals, and oil, which may then trigger other cleanup requirements.

**Tire Existing Practices**

CTCLUSI does not have an existing Tire recycling program. CTCLUSI encourages proper tire disposal. Proper disposal occurs when the new tires are put on a vehicle (and old tires are taken by the company selling new tires); Tribal and community members can often drop off a limited numbers of tires at transfer stations or recycling centers. Tribal members are encouraged to call their county Special Waste department to inquire about tire collection days (which may coincide with HHW collection).

**Contracted Services and Agreements**

CTCLUSI may choose to use a private contractors for scrap tire disposal. Contractors hired to manage scrap tires collection and disposals are trained in hazardous waste handling and manifesting requirements, and can be available on an as needed basis.

**Program Development**

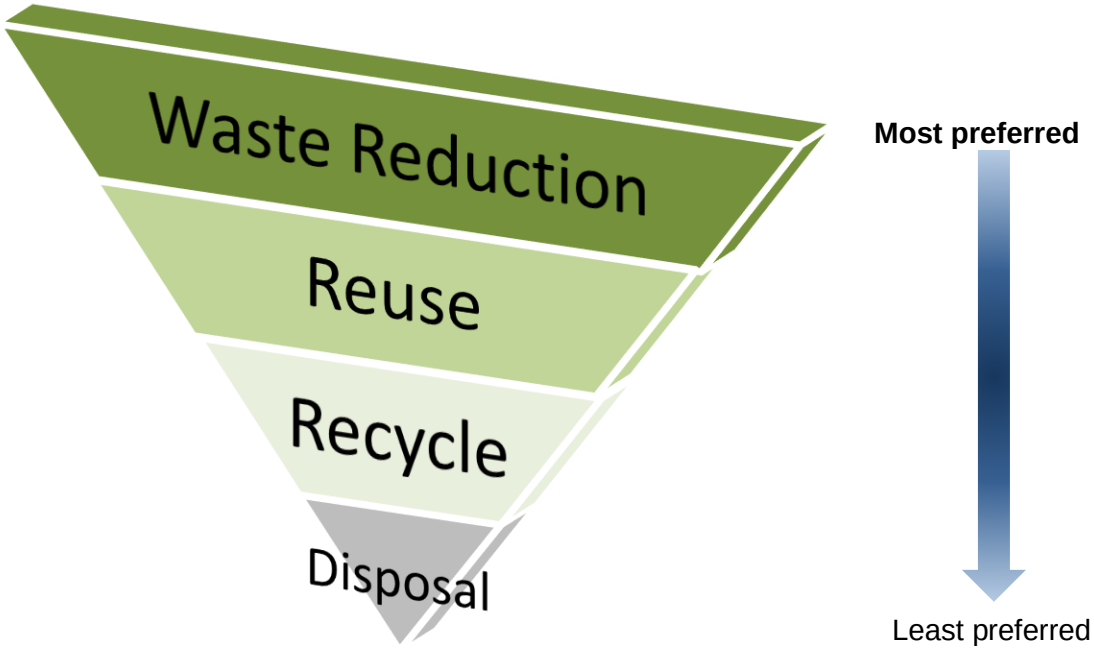
- CTCLUSI will manage surveillance of contracted services for scrap tire disposal.
- CTCLUSI may look to state or federal scrap tire programs for financial assistance to fund clean-up on Tribal Lands or hold scrap tire collection events.
- There are a variety of uses for scrap tires instead of disposal. Scrap tires may be recycled and produce products such as floor mats, boat bumpers, agricultural and horticultural applications, sports and playing fields and tracks, playgrounds, to name a few. CTCLUSI will consider and encourage recycling when managing the disposal of scrap tires

# Chapter 6

# Waste Reduction Outreach and Public Education

**WASTE REDUCTION**

Waste reduction includes both waste prevention and reuse. Recycling is also a form of waste reduction. The following figure highlights preferred ways to manage waste, reduce environmental degradation due to waste, and manage costs.




Source reduction is defined as the practice of designing, manufacturing, purchasing, or using materials in an effort to reduce waste volume or toxicity. Source reduction approaches waste reduction by addressing the origins of waste generation. Producing a new product requires materials (raw or processed) and energy (through extraction, processing or transport of the materials or product). Consequently, reduction and reuse of products have been recognized as effective ways to conserve natural resources, protect the environment, and save money.

Reuse is defined as using objects or materials over again, or finding new uses for them so they are not thrown away. Reusing items reduces waste at the points of use because it delays or avoids their entry into the waste collection and disposal system. Examples of reuse include crushing broken-up concrete and using it as an aggregate for road base and reusing empty food jars to store food, nails, buttons, etc.

***CTCLUSI recognizes that the most effective way to reduce waste is to not create it in the first place.***

**SOURCE REDUCTION**

*To have a successful source reduction program, Tribal employees and Tribal members need to be trained in source reduction and promotion of reduction methods needs to take place. Practicing source reduction can achieve cost savings through reduced purchasing costs and lower waste collection, transportation, processing, and disposal costs.*

- CTCLUSI does not currently implement any source reduction strategies.
- CTCLUSI will work to develop goals and integrate source reduction strategies
- When developed, waste reduction goals and strategies[12] will be included in the Tribal Integrated Waste Management Plan and if applicable the Employee Handbook
- CTCLUSI will work to promote waste reduction through outreach and education

**REUSE**

*Reuse is preferred to recycling because the materials do not need to be reprocessed before they can be used again. Items normally discarded as waste—such as appliances, furniture, office supplies, clothing—can be reused as originally intended or as used products. Reuse is a good alternative to disposal for materials for which recycling facilities are located too far away.*

- CTCLUSI maintains a formal reuse program whereby used sheets and towels and sometimes furniture, from the Tribes' casino, are available to Tribal members without cost.
- CTCLUSI has not established a budget for public education and outreach materials to waste management, recycling or waste reduction
- CTCLUSI will work to promote reuse of items through outreach and education[13]

**RECOMMENDATIONS**

To improve waste management and to increase recycling, reuse, and source reduction, the Natural Resource Department along with the Tribal Administration will work to develop and implement waste management practices and improve outreach, education, and training regarding proper waste disposal methods. Waste reduction methods and benefits will be evaluated when time and funding permits. CTCLSUI may explore funding opportunities to implement or expand waste management services.

12 Examples of source reduction and reuse strategies are available in the TSWAN Integrated Solid Waste Management template

13 Examples of education and outreach methods are available in the TSWAN Integrated Solid Waste Management template

# Chapter 7

# Implementation

## IMPLEMENTATION OF THE TRIBAL INTEGRATED WASTE MANAGEMENT PLAN

Tribal Administration and Natural Resource Department will work together to manage and implement good Tribal waste practices outlined in the Tribal Integrated Waste Plan. When applicable Tribal Police may be another source of management and implementation of the Tribal Integrated Waste Plan. Tribal Council will work with Tribal Administration, Natural Resource Department, and Tribal Police to ensure that practices improve and maintain the quality of land, air, water, and cultural resources in the Tribes' Ancestral Territory for future generations. This plan includes the identification of existing waste systems and waste reduction strategies, implementation, monitoring and outreach methods.

### Tribal Personnel & Responsibilities

The roles and responsibilities of waste management are diverse and complex, will continue to grow and adapt as the Tribal Integrated Waste Management Plan develops and grow.

- **Tribal Administration**
  - Budgeting- anticipates revenues/losses from disposal fees and grant funds
  - Website resources- provides IT assistance for posting information on CTCLUSI website
- **Natural Resources Department**
  - Operation—develops , manages, and monitors Tribal Integrated Waste Management Plan
  - Produces and updates outreach material
  - Provides and updates resources for waste management to post on the CTCLUSI website
- **Tribal Police**
  - Enforcement and investigation of issues related to illegal dumping on Tribal lands
  - Resource for Tribal members to contact regarding inappropriate waste disposal, illegal burning activities, and pharmaceutical disposal.

### Needs

To expand and grow waste management it may be necessary to seek out funding to assist personnel costs or provide additional services.

## FINANCIAL OBLIGATIONS AND FUNDING

The major costs associated with managing waste include[14]:

- Program planning
- Facility design and construction
- Equipment purchases
- Cleanup
- Operation and maintenance
- Personnel training and administration
- Landfill closure and post-closure care

14 USEPA Tribal Decision-Maker's Guide to Solid Waste Management

**Program Planning**

Funding is needed to assist with implementation of the Tribal Integrated Waste Management Plan. Initial implementation costs include: wages for staff associated with waste management; production of outreach material; contracting services for waste collection or disposal to name a few.

**Funding Assistance**

There are two primary sources of funding for implementation of waste management through the Tribal Integrated Waste Management Plan.

- ***Indirect or tribal general funds***
- ***Grants or loans from state or federal agencies (or private organizations that provide grants to Indian tribes for waste and other environmental programs).[15] See Appendix***

CTCLUSI should speak directly with regional agency representatives from EPA, HIS, BIA, USDA, and HUD to inquire and secure funding for waste management projects. In many cases, talking with other tribes may provide additional resources for implementation of the Tribal Waste management Plan or expansion of current waste management techniques.

15 See the USEPA's , Office of Solid Waste and Emergency Response document: Grant Resources for Solid Waste Activity in Indian Country,

Acknowledgements:

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