



TUBA CITY DUMP  
**COMMUNITY INVOLVEMENT PLAN**

# INTRODUCTION

Under the Federal Superfund program, the United States Environmental Protection Agency (USEPA) is overseeing a comprehensive environmental investigation and evaluation of cleanup options for the Tuba City Dump. This Community Involvement Plan (CIP) outlines specific outreach activities to address community concerns and meet the following goals:

- Encourage community interest and give the public the opportunity to provide meaningful input into site cleanup decisions;
- Provide to the Navajo and Hopi communities accurate, timely and understandable information about what we learn in our investigations, in a manner considerate to their preference and culture;
- Respect and consider community and tribal leaders' input and feedback on USEPA's process as it is being carried out.

To put this plan together, USEPA began by conducting a series of community interviews in March 2012 with residents, elected officials and other stakeholders in the area. Many interviews were conducted with individual residents and tribal leaders in the Upper Village of Moenkopi, and in the Moencopi Village – Lower (also known as Lower Moencopi), within the Hopi Tribe. Earlier interviews, in 2011, were conducted with residents of Lower Moencopi.

USEPA did not conduct interviews with residents on the Navajo Reservation because many of the Navajo residents had been interviewed recently by Navajo Nation EPA and USEPA for site history information. Out of respect for these residents, the Navajo Nation EPA asked USEPA to coordinate the development of the CIP through their Community Involvement Coordinator because they are already familiar with the Navajo residents' preferences for receiving information and staying involved with site decisions.



📷 Welcome signage at open house event

# COMMUNITY INVOLVEMENT PLAN ORGANIZATION

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## THE COMMUNITY

This section provides a brief community profile and identifies issues and concerns raised during the community interviews.

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## THE COMMUNITY INVOLVEMENT ACTION PLAN

Presented in this section is USEPA's action plan for addressing the issues and concerns identified in the interviews. The CIP relies on tools and techniques that USEPA has developed over the years at hundreds of Superfund Sites.

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## TIMING OF COMMUNITY INVOLVEMENT ACTIVITIES

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## APPENDICES

The Appendices provide the following: Site History, Overview of the Federal Superfund Program and Process, Site Contaminants and Information from Studies, List of Acronyms, a Glossary and Key Contacts.

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# THE COMMUNITY

## COMMUNITY PROFILE

While Navajo residents outnumber Hopi about ten to one, this is a bi-Tribal area. At its intersection with Main Street in Tuba City, Highway 160 is the boundary between the Navajo Nation and the Hopi Reservation. To a limited degree the tribes share schools and commerce, and there are a significant number of intermarried families that live on both Navajo and Hopi sides. However, they have separate leadership, differing cultures and traditions, separate services and completely independent water supply infrastructure (including wells, pumps, treatment systems, canals, pipes, and reservoirs). There is a limited and declining amount of water available in the area, both in aquifers and surface water bodies, due in part to an extended drought and also due to rising water demand resulting from increased development. In this desert environment, water is a scarce and life-critical resource. There is a history of contested rights to water between the two tribes.

### Navajo Nation (Tuba City)

Tuba City is located on the western end of the Navajo Nation and is the largest in terms of population on the Navajo Nation. Demographic features include:

- 8,610 – Population of Tuba City (2,156 Households)
- 92.4% Native American Population, 3.8% White, 3.3% Latino, 0.8% Asian

- 50.2% of population speaks languages other than English in the home
- Over one-third of the population (34.5%) is under 18 years old

The Navajo Nation is the largest Native American land designation within the United States with an area larger than 10 of the country's 50 states. The Tuba City area has historically been an agricultural community. However, tourists visiting the geological diversity of the high desert area in places like the Grand Canyon and Monument Valley have brought tourist oriented development to the area.

### Hopi Tribe

The Hopi Tribe is a sovereign nation located in north-eastern Arizona. The reservation contains more than 1.5 million acres, and its population lives primarily in 12 villages on three geologic mesas. The area of the Tribe where the TCD is located is known among the Hopi as “the island,” because it is non-contiguous with the remainder of the Hopi Reservation and is surrounded by the Navajo Nation.

### Village of Moenkopi - Lower

While traveling south from Highway 264 just south of Highway 160, turning off and downhill on Kachina Trail and then south to Tewa Road will lead to the Village of Moenkopi - Lower (also known as Lower Moenkopi). In the late 1800s, after migrating from the Village of Oraibi, Hopi residents began to farm and settle the area. The Hopi originally settled here

on a bluff just above the Moenkopi Wash. The area had arable land, a supply of agricultural irrigation water through Pasture Canyon, and natural deep water springs for drinking water. Today, Lower Moenkopi has approximately 30 residential households and is locally known to be the original Hopi settlement in the area.

Some members of Lower Moenkopi have moved the short distance north to the Upper Village of Moenkopi over time.

### Upper Village of Moenkopi

The Upper Village of Moenkopi lies just north and at higher elevation than Lower Moenkopi. It extends northward to Highway 160, and is roughly split north-to-south by Highway 264. It has approximately 200 residential households and a population of 964. The area originally grew from the original Lower Moenkopi Village to the south, but other Hopi have also moved to the Upper Village of Moenkopi from other areas. Upper Moenkopi is now governed by a formal constitution. It can be subdivided into two parts: the main Upper Village, which lies west of Highway 264, and the Northeast Development, which lies northeast of the Upper Village of Moenkopi and east of Highway 264. The Northeast Development includes some moderate-aged homes as well as newer homes built with assistance from the U.S. Department of Housing and Urban Development (HUD). Homes in the main Upper Village of Moenkopi (west of Highway 264) are generally older, with those on the south portion being the oldest.

The Upper Village of Moenkopi is growing commercially. New housing is being planned for the Northeast Development, and a new hotel and restaurants have been built on the Hopi side of Highway 160. Lower Moenkopi is working on a new housing development on its land assignment south of Moenkopi Wash.

The leadership and governance of the Upper Village of Moenkopi and those of Lower Moenkopi are not shared. While all are Hopi, the cultural outlooks of the villages differ from household to household.

## COMMUNITY ISSUES AND CONCERNS

To better understand the community, its culture and concerns, USEPA was able to interview many Hopi Tribe members. Significant and useful information was also gained by interviewing the Navajo Nation EPA Community Involvement Coordinator and from past work with the Navajo community near the TCD site.

Having knowledge or some experience with the TCD was relatively common, though many residents were not as aware of USEPA's activities as might have been anticipated. Many residents recall taking trips to the Tuba City Dump to dispose of trash. Residents remember having health concerns about smoke and dust from fires that were lit to burn the trash in the TCD while the TCD was operating.

It was apparent from the interviews that water quality and water supply were among the most important environmental issues in the area. As population and development has grown in the area, so has concern about the scarcity of clean water. Many of those interviewed wanted to know whether their drinking



water was safe to drink. Farmland in the Moenkopi Wash is an important source of food for the residents in the area, and many noted that water supply has been declining in the last ten years.

Public services are another concern for many in the area. Trash service in the Moenkopi area was said to be inconsistent. The pileup of refuse has led to illegal dumping sporadically throughout the area. The TCD has also led to concern over the safety and operation of waste operations in the area. Many residents had questions about the operation safety of many of the landfills operated on tribal lands today.

Community concerns and preferences are grouped into the following categories:

- I. Tuba City Dump Concerns
- II. Other Environmental Concerns
- III. Communications & Public Education Preferences

### Moenkopi Wash

### Tuba City Dump Concerns

#### Cleanup Duration

Concerns over the amount of time to study the Dump and perform cleanup were mentioned by most residents. While residents were pleased that the dump has been closed since it ended operations in 1997, they were also frustrated that cleanup has taken so long and that cleanup officials have not completed collecting data.

While there have been highly elevated levels of uranium found in a groundwater monitoring well immediately adjacent to the dump, other less-elevated uranium levels have been found in groundwater sporadically farther away. The geology and movement of water in the ground in this area is very complex.

Past data has led to conflicting interpretations, and this has led to USEPA requesting that BIA collect additional and more sophisticated data so that the groundwater system, and any effect from the dump, can be understood. Without this, it would be very difficult to determine the need for, or design of, a cleanup system for groundwater. USEPA is considering all past reports and data in the present work. More information is provided in the Appendices.

### Drinking Water Well Contamination

Many residents expressed concern that their drinking water wells may be contaminated by the uranium found in wells near the TCD.

While USEPA has not determined whether uranium could move to drinking supply water wells in the future, current drinking water does not contain elevated levels of uranium, the main contaminant of concern at the TCD. Water from the wells and springs in the area is tested regularly and is safe to drink. More information is provided in the Appendices.

### Past Exposure to Smoke from the Dump

Residents said that it was common to see plumes of smoke from the TCD, as trash was burned at the Site to reduce the volume of the waste. USEPA has found that the prevailing winds in the area would blow toward the East away from the Tuba City/Moenkopi area toward a largely uninhabited area. Since the Dump is covered and no longer in use, this exposure pathway no longer exists.

## OTHER ENVIRONMENTAL CONCERNS

### Water Concerns

#### Supply Concerns

Many residents are wondering whether local water authorities will be able to continue to meet their drinking water needs as population growth and new retail and commercial development in the area have placed greater strain on limited water resources.

On Hopi Lands local irrigation water is especially important to meet agricultural needs. Many residents are concerned about having enough water allocated to be able to farm what they need. Water rights in Pasture Canyon Reservoir have been especially important because of this.

USEPA understands the scarcity of public water supplies in this area and will seek a cleanup that is consistent with preserving as much of this resource as possible. The Navajo Nation Department of Water Resources and the Hopi Tribe Water Resources Program work to manage water resources in the area.

#### Water Quality Concerns

Municipal water supplies and springs in the area are tested regularly, as required by law, and have been found safe to drink. Uranium, the main contaminant of concern at the Site, does not appear at elevated levels in the drinking water supplies. These water supplies include the springs in the Moenkopi area.

The Navajo Nation EPA (NNEPA) advises residents to only drink water from regulated drinking water sources, such as those operated by the Navajo Tribal Utility Authority.

## COMMUNICATIONS & PUBLIC EDUCATION PREFERENCES

### Communication Philosophy

#### Three Strategies, One Site

The input provided from interviews has led USEPA to develop three related communication strategies for the Area:

- HOPÍ 1. Village of Moencopi – Lower (Lower Moencopi)
- 2. Upper Village of Moenkopi (main village and northeast development)

NAVAJO 3. Tuba City

Lower Moencopi was the original Hopi settlement in the area. Most of the traditional Hopi customs and subsistence farming lifestyle here have been preserved. USEPA has found that speaking directly to residents, in the presence of Lower Moencopi leaders, is an effective way to communicate. Leadership in Lower Moencopi is not governed by a constitution and is less formal than in the Upper Village of Moenkopi and Tuba City.

According to villagers, the Upper Village of Moenkopi was formed when Lower Moencopi had run out of space. While Hopi identities as well as some family ties are preserved from the Lower Village, the residents of the Upper Village of Moenkopi and Lower Moencopi differ in cultural outlook and are not always comfortable with the same venues and modes of communication. Because of differences in government, culture, and communication preferences, USEPA has found that developing somewhat different communication strategies for each Hopi Village is appropriate.

North of Highway 160 is the Navajo Nation and Tuba City. Navajo Nation representatives have asked that separate meetings and outreach take place for the Navajo community and the Hopi Communities. Hopi officials have also made this request of USEPA. The Navajo Nation is a different sovereign with its own culture and concerns, and speaks a different language than the Hopi Tribe. USEPA therefore believes that having separate communication strategies for the Navajo and Hopi residents is appropriate.

### Communication Preferences

USEPA has found that most residents prefer to receive information from USEPA either through individual face-to-face communication (such as a door-to-door visit), through small group venues with people they are comfortable with and who have similar concerns, or through written factsheets.

At times larger public forums will be necessary; however, much of the population noted that public meetings may not be the best way to communicate. Frequent leadership changes, low public turnout at large community meetings, and a perception of ineffectiveness at local civic meetings were the most-cited reasons.

All interviewees recommended to USEPA that communication be short, concise and include many graphics. Among tribal government interviewees, there was a strong emphasis that USEPA should be coordinating its communication with leadership.

At the same time, the degree of trust of local government representatives was not uniform, and many persons said they would feel most comfortable hearing the messages away from the village hall and administration.



 Historic USEPA and Navajo Nation EPA staff at public event



# THE COMMUNITY INVOLVEMENT ACTION PLAN

## COMMON ELEMENTS

### Information Repository

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At Superfund sites, USEPA typically maintains a set of documents and information locally, where it can be easily accessed by the public. This is called the “Information Repository.” It may contain paper or electronic copies of technical or planning documents, fact sheets, informative videos, results of previous meetings, and other similar types of information.

A promising location for the Information Repository for the TCD project would be the Tuba City Branch Library. However, it is also important to supplement this by adding important documents to the community service centers in Upper Moenkopi and the Moenkopi village and the Tuba City Chapter House.

To browse or check out site documents, please visit the Information Repository.

#### Main local Information Repository

**Tuba City Branch Library**  
78 Main Street  
Tuba City, AZ 86045

**Diné College**  
600 Edgewater Dr.  
PO Box 1716  
Tuba City, AZ 85045

#### Other Information Centers

**Community Service Center**  
Upper Moenkopi Village

**Community Service Center**  
Moenkopi Village

**Chapter House (To’Nanees’Dizi Chapter)**  
Tuba City

**Local High Schools**  
Greyhills Academy High School  
Tuba City High School

**Cline Library, Northern Arizona University**  
Knolles Drive and McCreary Road  
PO Box 6022  
Flagstaff, AZ 86011-6022

**Tuba City Travel Information Center**

**Coconino County Tuba City Office**

## Electronic Information Centers

An information repository will be available on the internet at:

[www.epa.gov/region09/tubacitydump](http://www.epa.gov/region09/tubacitydump)

## Pre-Recorded Presentations at Repository

There was also a desire to bring viewable presentations to the Site Repositories. Posters, diagrams and dioramas should be displayed at local site repositories to provide large visual information to local community members.

## Written Communication

Residents expressed support toward written communication from the agency. They had received conflicting past information about the site, and it is important for them to receive a clear position and story from USEPA about what we know. They also offered a few suggestions to help improve communication:

**KEEP IT SHORT AND SIMPLE** – Many residents learn English as a second language, therefore it is important that English communication be as simple as possible.

**INCLUDE AS MANY GRAPHICS AS POSSIBLE** – Visuals were received positively. Historically, the Hopi and Navajo languages are not written languages and there is a cultural preference of expressing written information through graphics.

## Language Support

USEPA understands that many residents, especially elders are Navajo and Hopi language speakers. In order to help facilitate differences in language and culture, USEPA will seek to have tribal representatives present during public meetings and open houses when possible. At this Site, USEPA has previously worked with the Community Involvement Coordinator for the Navajo Nation EPA, and the Community Services Administrators at the Hopi Villages.

When EPA conducts a formal public meeting for the Proposed Plan, it will also provide real time language interpretation for that meeting.

## LOWER MOENCOPI / UPPER VILLAGE OF MOENKOPI

### Coordination with Community Services Administrators

USEPA plans to coordinate with the Community Services Administrator at both villages before approaching any community involvement activities. USEPA recognizes that there are unique cultural differences within the sovereign Hopi Tribe. USEPA has conducted limited Community Involvement Activities in the past in the area and has learned that our outside presence should be approached with support from local leaders. Community leaders may offer different perspectives toward implementing Community Involvement Activities, and therefore USEPA must be flexible in its work.

 (right) Pasture Canyon area near Site  
 (opposite page) Installation of monitoring well near the Site

## Distribution

Face-to-face communication is very important at this Site. Historically, expectations of Government Agencies have been low and there is a large sense of self-reliance and self-sufficiency in the area, especially in the smaller Lower Moencopi Village. When possible, distribution of written materials is done best in person and through U.S Mail.

Where practical and feasible, USEPA will attempt to convey messages in door-to-door or small group settings (face-to-face) as well as by written communication. Some residents have low expectations of the federal government, and this type of connection assists in developing trust and keeping misunderstandings of new materials and information to a minimum. This kind of contact was requested by Hopi residents fairly uniformly.

It should be noted that not all materials can feasibly be distributed in person. However, USEPA does recognize the preference and benefits of this approach. When residents receive information or messages in a more personalized way, it conveys to them that they are important and are part of the process and village activities.



It should be noted that there is little Internet connectivity in homes in Moencopi / Moenkopi; in fact, many homes in Lower Moencopi lack electricity. Lower Moencopi has four computers with Internet connectivity at the community center; the Upper Village of Moenkopi community center has approximately ten computers. Some people make use of these to check their email, pay bills, search topics, etc.

### Lower Moencopi

For the Moencopi Village, distribution should be done door-to-door. The village is small enough to complete this task within a couple of hours. As many residents here do not speak English with confidence, it is important that this be undertaken with a village representative. Again, as resources and feasibility permit, meeting and event announcements should be done in person for optimal results. It also is noted that all households do have post office boxes.

### Upper Village of Moenkopi

Distribution of written materials should be done through the post office in the larger Upper Village of Moenkopi as most residents have a P.O. Box in Tuba City. While it is a good idea also to post information and/or announcements in the monthly newsletters produced by the local village administration at the beginning of each month; USEPA heard from residents that many do not receive these newsletters or do not remember receiving them. Ideally, then, USEPA will mail these materials to post-office boxes as well as provide them to the administration for the newsletter. Again, in the ideal case and resources permitting, USEPA will conduct short door-to-door visits before meetings, gatherings or events, inviting each resident and encouraging communication. To the extent this is not feasible; materials will be sent to post office boxes, at a minimum.

### Availability

Written communication should also be available at both community services centers. Both centers have bulletin boards where these may be displayed. It is also important to provide copies the local site repository (listed below) and at other locations.

### Informational Gatherings

Many residents expressed mixed feelings about coming to large public meetings. Some expressed that they are a good way of interacting with village leadership, while others expressed frustration about village leadership and found the meetings to be ineffective.

Historically, the USEPA conducted meetings at the Moenkopi Day School in the Upper Village of Moenkopi just south of the highway 264 and 160 junction. More recent meetings have occurred at the Lower Moencopi, and Upper Moenkopi community centers and the Tuba City Chapter House in an effort to reach as many area residents as possible.

### Lower Moencopi

For most residents meetings are not an effective way to communicate with the Agency. Meetings should be done sparingly. When done, they should be conducted at the community services center in the northwest area of the village. Since the village is small it is more effective to have conversations about the TCD informally and within homes.

### Upper Village of Moenkopi

The Upper Village of Moenkopi is sufficiently larger than Lower Moencopi that USEPA will need to rely more on open houses and other informational gatherings. Three approaches are recommended:

- a. “Coffee Klatches” (informal, small gatherings)
  - This idea is to hold small, informal gatherings

of like-minded individuals in private residents’ homes. The resident host would be arranged in advance and after receiving input from residents about who should attend. Because of the diverse ideas and subcultures within the community, a “coffee klatch” meeting can help to create an inviting atmosphere where people can exchange ideas.

- b. Small Venue Meetings. Like coffee klatches, this idea is to hold small, informal gatherings in small venues based on local affiliations. Church organizations, senior centers, local leaders, and any community member may be able to host a meeting in a small venue where USEPA could present information, receive input, and discussions could occur.
- c. Meetings and Open Houses – These larger meetings should be done during milestones of the cleanup process. While the community is more familiar with the town hall style public meeting, open houses should also be considered.

 Open House event in Lower Moencopi



## NAVAJO

*Navajo Nation EPA representatives respectfully requested that USEPA not conduct interviews with Navajo residents because many of the Navajo residents had been interviewed recently by Navajo Nation EPA and USEPA for site history information. USEPA was asked to coordinate the development of this plan through their Community Involvement Coordinator.*

### Coordination with Navajo Nation Community Involvement Coordinator

USEPA plans to coordinate activities with the Navajo Nation Community Involvement Coordinator. USEPA recognizes that there are unique cultural differences between Hopi, outside tribal lands, and the sovereign Navajo Tribe. Historically, USEPA has conducted cleanup activities relating to Leaking Underground Storage Tanks in Tuba City over the past few decades, and has had some associated community involvement activities. Past activities have been coordinated between the local Chapter House and the Navajo Nation EPA Community Involvement Coordinator.

### Distribution

Tuba City is spread over a large geographical area. Residents in the area are relatively isolated from the central city making any door to door communication difficult. In order to reach as many households as possible, written materials should be distributed to all 2,156 households in Tuba City. Dependence on mail communications will be greater since it will be infeasible to depend only on door-to-door contact given the number of households. There is very little internet accessibility; and all residents have access to a Post Office Box.

Written communication will also be sent to the Information Repository, the Chapter House, local High Schools, the Coconino County Tuba City Office and the Travel Information Center.

### Informational Gatherings

Politically, the Chapter House meetings are the best opportunity to reach those who are civically engaged in the community. USEPA should present as a part in regularly scheduled meetings for the Tuba City Chapter.

For the Proposed Plan meeting, USEPA should set up a meeting of its own. Potential locations include the Chapter House and the local schools. Town hall style meetings should be the standard for the community.

### Newspaper Communication

Press releases and meeting or event announcements can be placed in the two major newspapers available in the area:

**Navajo-Hopi Observer**  
2717 N. Fourth St., Ste. 110  
Flagstaff, Arizona 86001

**The Tuuvi** (Newspaper)  
(928) 734-3282

### Radio Communication

Radio Communication may be an effective way of reaching the residents of this area. The following radio stations have programs where USEPA may participate, and where they may run informational bulletins:

KGHR 91.3 FM Navajo Public Radio  
KTNN 660 AM The Voice of the Navajo Nation  
KUYI 88.1 FM Hopi Public Radio  
KNAU91.7 FM Arizona Public Radio

### Other Public Events

Tuba City has various events that USEPA may be able to attend and have a booth. These events are seen as a good way of having informal communication with local residents. The following events have been identified:

- a. TUBA CITY FLEA MARKET  
On the west side of Main St. there is a weekly flea market that occurs every Friday. It may be possible for USEPA to set up a booth.
- b. WESTERN NAVAJO NATION FAIR / TUBA CITY FAIR  
Around mid-October there is a small Tuba City Fair. As many local residents attend the fair, it may be an opportunity to informally speak to community members. 
- c. NAVAJO NATION FAIR  
Regionally, this is the large fair for the area. It is estimated that more than 115,000 people attend throughout Northern Arizona/New Mexico. It may be a good opportunity to help update the communities on all projects throughout tribal areas in Northern Arizona and New Mexico.

# TIMING OF COMMUNITY INVOLVEMENT ACTIVITIES

The Agreement on Consent between USEPA and the Bureau of Indian Affairs (BIA) requires that BIA perform the RI / FS work according to a detailed schedule. The schedule can change as the project moves along due to a variety of factors, some of which are within, and others of which are outside BIA's (or USEPA's) control. Because of the possibility of such changes, it is not possible in this plan to give specific dates on which various community involvement activities will take place. Nonetheless, it is possible to identify certain principles and the relative timing of activities that are anticipated.

One overriding principle is that USEPA intends to involve the community throughout the process, in both informal and formal communication, not only near the end of the process when the cleanup decision is about to be made. This will include explaining and discussing the findings of the investigations, formulating the cleanup options that will be considered in the feasibility study, gaining input from the tribes and tribal members on various options and issues, and so-forth.

A second important principle is that if issues or concerns arise, particularly those that may not have been anticipated, the community involvement plan must be flexible enough to address them in a way that engages the community effectively, even if that means introducing new approaches, or having communication with the community that was not originally planned-for.

Under the present enforceable schedule, the draft of the RI Report would be issued in mid-2013 and the draft FS Report in late 2013.

At present, USEPA would anticipate having community outreach activities, possibly including fact sheets, flyers, coffee klatches, meetings, etc. as discussed earlier in Chapter 2, at the points in the process bulleted below. Once again, additional activities could be added as needed or appropriate.

- At the point that the data from the investigations is available and there is enough analysis so that its meaning can be conveyed to the community (this may happen multiple times, before the RI Report comes out);

- During planning for the risk assessment;
- To discuss findings of the risk assessment;
- To discuss the cleanup options that will be considered in detail in FS;
- To discuss the draft RI Report when it is ready;
- To discuss the draft evaluation of cleanup alternatives in the FS,
- At other times as appropriate; for instance, to address water scarcity or drinking water quality, seasonal concerns, etc.

After the FS is drafted it is issued for public comment along with a "proposed plan" which tells the community the cleanup alternative in the FS that USEPA proposes to choose. A formal public hearing is required by law at that point.

## COMMUNITY INVOLVEMENT ACTIVITIES

### HISTORIC ACTIVITIES

Date	Activity
<b>February 2012</b>	<ul style="list-style-type: none"><li>• USEPA Publishes factsheet titled “USEPA Starts New Phase of Work”</li><li>• Copies sent to Tuba City Chapter House (200), Upper Moenkopi Community Center (50) and Moencopi Village Community Center (50).</li><li>• Community Involvement Coordinator helps distribute copies with Moencopi Village representative to 30 homes.</li><li>• 200 factsheets distributed within February 2012 newsletter to Upper Moenkopi residents.</li></ul>
<b>March 2012</b>	<ul style="list-style-type: none"><li>• USEPA conducts Interviews throughout the Upper Village of Moenkopi for the Community Involvement Plan</li></ul>
<b>April 2012</b>	<ul style="list-style-type: none"><li>• USEPA issues an update to the February Factsheet, updating timelines and sending them to every resident in Tuba City, Upper Moenkopi, and the Moencopi Village through the U.S. Post Office</li></ul>
<b>Fall 2012</b>	<ul style="list-style-type: none"><li>• USEPA attends the Western Navajo Fair with booth from Thursday – Saturday in October</li><li>• Community Involvement Plan for the Site is completed and distributed to Site locations</li></ul>
<b>Winter 2012</b>	<ul style="list-style-type: none"><li>• USEPA to host a series of three communication events for Tuba City, Upper Moenkopi, and Moencopi Village to collect concerns and answer questions about site progress.</li></ul>

# APPENDICES

## SITE HISTORY

The Tuba City Dump (TCD), also known as the “Tuba City Open Dump” was used primarily for disposal of municipal waste by local businesses and the general public between the 1950s and 1997. The Dump was operated by BIA. During this time, it was not supervised as a solid waste disposal site. The landfill received waste from the Tuba City area and, to a lesser extent, from the Moenkopi area.

Since the TCD was unattended and had largely unrestricted access during its operation, information about the disposed wastes is limited. It also is located along a major highway. BIA closed and covered the dump in 1997; however, the TCD has not been permanently closed per regulations.

Previous studies involving drilling and sampling of the TCD identified soil and ash as the primary waste materials, with small amounts of debris such as glass, metal, plastic, wood, building materials, paper, bone, and fabric. Local residents report remembering that waste from the Rare Metals uranium mill was

disposed at TCD. Extensive studies have not revealed uranium-bearing mill process waste at the TCD to date. The Navajo Nation reports that a number of mill balls (metal spheres used as equipment in grinding) have been found on the TCD cover material.

The waste material in the TCD was open-burned periodically to reduce its volume and reduce organics, leading to its high ash content. Much of the material in the TCD has been regraded, compacted and consolidated within the original dump site property. The TCD is covered with a temporary soil cover, and surrounded by a seven-foot high fence with razor wire and locked gate.

More information about TCD contaminants, and findings from various studies, is provided in Appendix C.

USEPA initially worked on closure of the Dump under its Waste Division. The geology and movement of water in the ground in this area is complex. Since the late 1990s, studies and sampling has been done for varying purposes and not under one consistent strategy, leading to differing interpretations of the data.



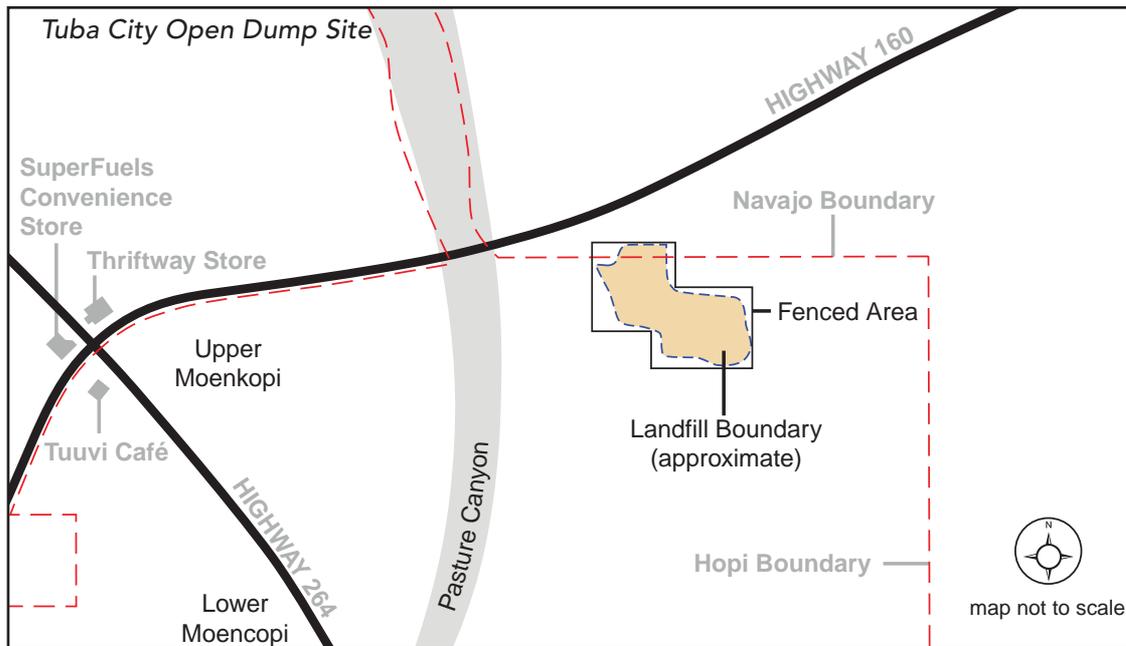
 Monitoring well MW-8

Since 2008 USEPA has been addressing the TCD under its Superfund program, which is designed to use data to select a remedy. Two of the most important elements of the Superfund process are called the Remedial Investigation (RI) and Feasibility Study (FS). The RI/FS is not simply an isolated additional study. Instead, it pulls together all the information known about the TCD and surrounding conditions, gathers more data and performs analysis as needed to understand what is going on at the TCD. It then uses this complete analysis to develop and compare options for cleanup.

Additionally, USEPA now has an enforceable Administrative Order on Consent with BIA that requires BIA to perform the RI/FS subject to the oversight and approval of USEPA. This agreement has an enforceable schedule, and USEPA can impose penalties for failure to comply with the agreement. During this effort, USEPA is keeping the Hopi Tribe and Navajo Nation informed and requesting their input. The communities potentially affected by the TCD are part of the Superfund process.

## LOCATION

The Tuba City Dump (TCD) is located near Tuba City (Navajo Nation), and Moenkopi (Hopi Reservation), Arizona. It lies adjacent to and just south of US Highway 160, approximately one mile east of the State Highway 264 junction. This location is about 10 miles east of U.S. Highway 89 northeast of the Grand Canyon, and roughly midway between the U.S. cities of Page and Flagstaff, Arizona, which lie roughly 100 miles to the north and south, respectively. The TCD lies on land that straddles the boundary between the Navajo Nation and Hopi Reservation. It consists of approximately 30 acres (28 acres on the Hopi Reservation and two acres on the Navajo Nation).



## THE SUPERFUND CLEANUP PROCESS

This section provides a general listing of the many steps in the cleanup process, from the initial investigations through the removal of the site from the National Priorities List (Superfund List).

*It is important to note that the Tuba City Dump is not officially listed under the National Priorities List as traditional Superfund Sites are. However, USEPA will be addressing this cleanup under the Superfund Process listed below.*

As of December 2012, the site TCD project is in the phases described below that are called “Remedial Investigation” and “Feasibility Study” (Steps 4 and 5).

### 1. Site Discovery

The first step in the Superfund process is called Site Discovery. This term applies to all of the different ways that USEPA becomes aware of the need to consider a site for cleanup. Sometimes the notification comes from the general public, sometimes from a State that has been working on the site for some times, and sometimes other reports, such as the media, bring the site to USEPA’s attention.

### 2. Preliminary Assessment/Site Investigation (PA/SI)

Following Site Discovery, USEPA reviews any existing information, including prior sampling results, in a step called the Preliminary Assessment. This is followed by various activities such as a site

visit or additional sampling, which are called the Site Investigation. Together these are called the Preliminary Assessment/Site Investigation or PA/SI.

At this Site, BIA conducted a PA/SI and followed steps to stabilize the Site in the late 1990's and early 2000's

### **3. National Priorities List (NPL) Process**

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If the information warrants it, USEPA then goes through the National Priorities Listing (NPL) process, which requires an analysis of the types of known or suspected contaminants and their location next to people or the environment, to determine the potential for harm. The analysis document, the NPL Scoring Package, becomes the basis for approaching a State's Governor to request the State's agreement for proposing that the site be added to the National Superfund List.

In some cases, USEPA executes all or part of the Superfund process on a site that is not listed on the NPL. At the present time, the Tuba City Dump is one such non-listed site. USEPA Superfund has been overseeing cleanup at the Tuba City Dump since 2008.

### **4. Remedial Investigation (RI)**

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Following NPL listing, USEPA designs a thorough investigation of the site, characterizing both the lateral extent of contamination (the area affected and to what depth), and the types and concentrations of contaminants. This usually involves a significant air, soil, surface water and/or groundwater sampling process and often times multiple sampling events that can take many years.

Currently, BIA, with USEPA oversight, is working on completing the Remedial Investigation for the TCD.

### **5. Feasibility Study (FS)**

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Once the contamination has been identified, USEPA develops a list of possible ways to address it. The tools, techniques and process are organized into alternatives, often with multiple elements, that are evaluated using a nine criteria, including protectiveness of human health and the environment, ease of implementation, cost, and time to reach cleanup goals.

Sometimes certain elements are tested at a reduced scale in the laboratory or in the field. These are called treatability studies. Their results help USEPA decide which alternatives should be considered and offered to the public for their comments. Work on the Feasibility Study for the TCD is underway.

### **6. Proposed Plan**

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A Proposed Plan is a 10-20 page document written for the public and distributed principally through USEPA's mailing list. It summarizes the findings of the RI/FS, compares various ways to address site contaminants, identifies USEPA's preferred alternative, and explains how to provide public comments. It announces a formal 30-day comment period (minimum) on USEPA's proposal.

### **7. Record of Decision (ROD)**

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After considering and responding to public comment, USEPA issues the Record of Decision, which documents the selection of a cleanup option, and specifies all of its components as well as performance criteria and requirements that it will meet.

### **8. Remedial Design (RD)**

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Remedial Design is the development of engineering drawings and specifications for a site cleanup. This phase follows the remedial investigation/feasibility study. A fact sheet is distributed when the design work is at 70% complete.

### **9. Remedial Action (RA)**

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Remedial Action is the actual building of treatment facilities, removal of waste piles, entombment of contamination, implementation of institutional controls or any other aspect that completes the cleanup decision. This phase includes the testing and certifying of any facilities that are put into operation.

### **10. Five Year Review**

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This is an analysis prepared every five years to determine if site remedies remain protective of human health and the environment. Prior to the Five Year Review process beginning, the community is notified and asked to provide any information it has about the operations of the as-built remedy, or any issues and concerns that have arisen regarding the remedy. When the Five Year Review report is complete, the community is notified of the results.

Currently, enforcement agreements and approach has been established through the Record of Decision. The nature and conduct of the RD and RA phases will be established at a later time.

## **Other Possible Cleanup Process Steps**

Two other potential steps in the site's cleanup process might occur.

### **1. Interim Actions**

An interim action is any short-term, temporary or preliminary construction or activity that addresses contamination before a final cleanup decision is made. The choosing of an interim action often results in a public participation process similar to the Proposed Plan process that leads to a Record of Decision.

### **2. ROD Amendment/Explanation of Significant Differences**

If a final remedy needs to be changed after a Record of Decision has been made, the public is notified and a process similar to the Proposed Plan process leading up to a Record of Decision might ensue. This depends on the nature and extent of the proposed changes.

## **TCD CONTAMINANTS AND INFORMATION FROM STUDIES**

Past studies provide useful information and data about the contents, dimensions and waste depths in the dump. These studies are too numerous to discuss here. Generally, scans and sampling have been performed in boreholes looking for radioactivity and contaminants, and the ground has been sampled in many locations for various constituents and different types of uranium. Many groundwater wells have been installed, sampled, and groundwater levels have been measured. All of this past data is

being considered by USEPA in the present work. As discussed earlier, past studies have led to conflicting interpretations, and the remedial investigation is designed to consider all past data in one place and collect additional data to ensure that the key questions regarding contamination at the TCD and the need for remedial actions can be addressed.

In studies of soils conducted at the TCD, arsenic, copper, strontium and vanadium were found at elevated levels compared to what is usually found naturally in the environment, though not at high levels. Wastes and ash in the TCD are covered over with fill and contained within the fenced area. This is not considered a final closure of the TCD, however. No significant contaminant gases have been found in the TCD.

Uranium, sulfate, nitrate, chloride, and other contaminants have been found in the very shallow groundwater below and near the TCD. While levels of contaminants in groundwater are present in some locations at levels higher than what USEPA says is safe for long-term use, the water at those locations is not being used for drinking water presently. Drinking water wells are not presently contaminated above drinking water standards. Farmland and irrigation water is essential and widely used by Hopi farmers; this water is also presently safe to use.

The primary contaminant of concern at and near the TCD site is dissolved uranium. This uranium is not radioactive. At a high enough level, however, uranium can be toxic. It is therefore important to ensure that it does not enter drinking water supplies above safe levels. The possible sources and movement of uranium in groundwater in the Tuba City/Moenkopi environment is complex.

One possibility considered is that the TCD may have received uranium mill waste. Residents report remembering dumping from the Rare Metals uranium mill originally located four miles east of Tuba City on Highway 160. A number of ceramic and metal "milling balls" have been found on the dump surface. These are not uranium-bearing process wastes (such as waste ore, slurries, wastewaters, etc). They may be spent equipment used by the former uranium mill. The mill balls do not have the potential to contaminate soils or groundwater.

Two studies, one by USEPA and one by the Hopi Tribe, looked both in the dump waste and in adjacent soils for uranium-bearing mill wastes (such as may be derived from processing uranium ore) that might have come from the former uranium mill. Despite an intensive and targeted search, no such material was found in the dump in either study.

USEPA is still looking into whether uranium-bearing mill process waste may be in the dump but is also looking into other possible sources of uranium in the shallow groundwater both immediately adjacent to, and farther away from, the TCD. For example, one possibility being explored is that drainage channels (either on the surface or buried) are affecting the contamination. It is not clear at present how far uranium in groundwater extends away from the TCD, and what other processes may be affecting the uranium levels found in monitoring wells in the area. The USEPA is currently evaluating how groundwater moves in the area in three dimensions; how contamination may be moving; and whether it could later move to drinking water wells. These questions are being explored in the investigation being performed by BIA under USEPA's oversight. The closest water supply is located 4,000 feet from the dump. As stated, TCD contaminants are currently not affecting drinking water.

## MAIN SITE INFORMATION REPOSITORY

### Tuba City Branch Library

A branch of Flagstaff City-Coconino County  
Public Library

Main (928) 283-5856

FAX (928) 283-6188

### Library Manager

Pearl G. Goldtooth

goldtooth1957@yahoo.com

### Physical address:

78 Main Street

Tuba City, AZ 86045

### Mailing Address:

P.O. Box 190

Tuba City, AZ 86045-0190

### Regular Hours:

Sunday 1:00 p.m. – 5:00 p.m.

Mon–Thu 10:00 a.m. – 7:00 p.m.

Fri–Sat Closed

Website:

[http://www.flagstaffpubliclibrary.org/  
about/TubaCity.html](http://www.flagstaffpubliclibrary.org/about/TubaCity.html)

## HOLIDAYS

As Sovereign Nations, Navajo and Hopi observe holidays sometimes different to American Holiday's. The following is a list of Navajo and Hopi Holidays.

### Hopi

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**Winter Harvest Celebration** – February

### Navajo

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**Navajo Code Talkers Day** – August 14<sup>th</sup>

**Navajo Sovereignty Day** – Fourth Monday in April

## TIME ZONES

The Tuba City Open Dump and its surrounding areas lie within the Mountain Time Zone of North America.

Hopi tribe and the State of Arizona do not observe Daylight Savings Time.

Navajo Nation observes Daylight Savings time, between the second Sunday of March, and the first Sunday of November.

## GLOSSARY

**Administrative Order on Consent** – A legal agreement signed by EPA and an individual, business, or other entity through which the violator agrees to pay for correction of violations, take the required corrective or cleanup actions, or refrain from an activity. It describes the actions to be taken, may be subject to a



comment period, applies to civil actions, and can be enforced in court.

**Aquifer** – An underground geological formation, or group of formations, containing water. Are sources of groundwater for wells and springs.

**Arsenic** – A heavy metal that is hazardous to health if breathed or swallowed. It is used in insecticides, weed killers, doping agents, and various alloys.

**Contamination** – Introduction into water, air, and soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use.

**Groundwater** – The supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs. Because groundwater is a

major source of drinking and irrigation water, there is growing concern over contamination from leaching agricultural or industrial pollutants.

**Remedy** – Long-term action that stops or substantially reduces a release or threat of a release of hazardous substances.

**Risk Assessment** – Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or release of specific pollutants.

**Superfund** – The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities.

**Tailings** – Residue of raw material or waste separated out during the processing of crops or mineral ores.

**Toxic** – The degree to which a substance or mixture of substances can harm humans or animals.

**Uranium** - A heavy, naturally radioactive, metallic element that is used to produce nuclear power.

## ACRONYMS AND ABBREVIATIONS

<b>USEPA</b>	United States Environmental Protection Agency
<b>CIP</b>	Community Involvement Plan
<b>TCD</b>	Tuba City Dump
<b>BIA</b>	Bureau of Indian Affairs
<b>NPL</b>	National Priorities List
<b>RI</b>	Remedial Investigation
<b>FS</b>	Feasibility Study
<b>ROD</b>	Record of Decision

## CONTACTS

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 (left) Soil analysis at Site

 (opposite page) Posters at Open House event

