The Sanitation Facilities Construction Program of the Indian Health Service

Public Law 86-121 Annual Report for 2002

U.S. Public Health Service
Department of Health and Human Services

This Annual Report for Fiscal Year 2002 was produced by the Indian Health Service Sanitation Facilities Construction Program to make available frequently requested information about the Program. Additional information can be obtained by writing to the following address:

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Website: www.dsfc.ihs.gov

The Sanitation Facilities Construction Program Annual Report for 2002

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Preface

The Indian Health Service (IHS) Sanitation Facilities Construction (SFC) Program continuously endeavors to identify and report the eligible sanitation needs of American Indians and Alaska Natives to carry out a Program to meet those needs in cooperation with tribal governments. Those needs are summarized in this report as well as some of the accomplishments of the Program during the reported fiscal year. The Program's continuing challenges include improving community water supplies, waste water treatment systems, and solid waste disposal facilities in culturally diverse and often times remote areas-- from Alaska to Florida and from Maine to California. The projects highlighted in this report illustrate the typical SFC Program efforts in addressing these specific challenges.

Since the passage of Public Law 86-121 in 1959, the SFC Program has worked in partnership with tribal governments to construct essential sanitation facilities. As a result of more than four decades of cooperative efforts, many tribes have developed the administrative and technical capability to construct their own sanitation facilities with engineering support from IHS. The majority of all the SFC Program's construction work was accomplished by either tribes, tribal organizations or Indian-owned construction firms. As in previous years, a number of tribes continue to assume responsibility for their respective SFC programs, while the IHS, SFC Program managers continue to work with tribes and others to support the tribal Self-Governance/Self-Determination decision making process under the expanded authorities of Public Law 93-638, the Indian Self-Determination and Education Assistance Act. One goal of the SFC Program is to make available program information in a more open, accurate, and efficient way. This report, prepared annually since 1993, is one means of achieving that goal.

The Sanitation Facilities Construction Program

Introduction

The enactment of Public Law (P.L.) 86-121 on July 31, 1959, was a milestone in Indian health legislation and lead to the creation of the Sanitation Facilities Construction (SFC) Program within the Indian Health Service (IHS).

P.L. 86-121 authorizes the SFC Program to provide essential water supply and sewage and solid waste disposal facilities for American Indian and Alaska Native homes and communities. From 1959 through 2002, approximately $1.9 billion were appropriated for the construction of essential sanitation facilities for American Indians and Alaska Natives. Those appropriations, plus over $568 million in contributions from other Federal and State agencies and tribal governments, funded 11,094 sanitation facilities construction projects that provided water, sewer and/or solid waste disposal facilities for over 254,000 American Indian and Alaska Native homes.

In the year 2002, 511 sanitation facilities construction projects provided first-time services to 4,559 homes and sanitation facilities upgrades for another 16,666 homes.

The SFC Program is unique among Federal programs because P.L. 86-121 mandated consultation with tribal governments and encouraged tribal participation in carrying out its activities. Today, IHS employees work cooperatively with tribal personnel in providing essential sanitation facilities to Indian communities and Alaska villages. Enhancing tribal capabilities and building partnerships based on mutual respect are the major keys to the success of the SFC Program.

Protecting the health of and preventing disease among American Indian and Alaska Native populations are primary IHS objectives. In the clinical environment, physicians, dentists, nurses, and other medical care providers work to restore the health of ill patients. However, preventing illness is clearly the most effective way to improve health status. Improving the environment in which people live and assisting them to interact positively with that environment will result in significantly healthier populations. Providing sanitation facilities and better quality housing are environmental improvements that have proven track records in that regard.

The SFC Program Mission

Today, as it has for over 40 years, the SFC Program continues to provide assistance to the American Indian and Alaska Native people in eliminating sanitation facilities deficiencies in Indian homes and communities.

The IHS mission is to raise the health status of American Indian and Alaska Native people to the highest possible level. To carry out its mission, the IHS provides comprehensive primary and preventive health services. The SFC Program is the IHS' environmental engineering component. It provides technical and financial assistance to Indian tribes and Alaska Native villages (tribes) for cooperative development and continued operation of safe water, wastewater, and solid waste systems and related support facilities. In partnership with the tribes, the SFC Program:

Figure 1: Construction of a septic system, 1960's

1. ***Develops and maintains an inventory of sanitation deficiencies in Indian and Alaska Native communities for use by IHS and the Congress.***

2. ***Provides environmental engineering assistance with utility master planning and sanitary surveys.***

3. ***Develops multi-agency funded sanitation projects; accomplishes interagency coordination, assistance with grant applications, and leveraging of IHS funds.***

4. ***Provides funding for water supply and waste disposal facilities.***

5. ***Provides professional engineering design and/or construction services for water supply and waste disposal facilities.***

6. ***Provides technical consultation and training to improve the operation and maintenance of tribally owned water supply and waste disposal systems.***

7. ***Advocates for tribes during the development of policies, regulations, and programs.***

8. ***Assists tribes with sanitation facility emergencies.***

Tribal Involvement

The SFC Program employs a cooperative approach for providing sanitation facilities to American Indian and Alaska Native communities. During fiscal year (FY) 2002, tribes, tribal organizations or Indian-owned construction firms administered and/or expended approximately $94 million in SFC Program construction funds (approximately 71 percent of all SFC construction expenditures). Many tribes participated by contributing labor, materials, and administrative support to projects.

Figure 2: Funds expended by Indian and Alaska Native tribes and Indian-owned firms in FY 2002, by IHS Area.

Figure 3: Cedar Creek residents celebrated the completion of the water transmission line that went from design to construction completion in 10 month

Each sanitation facilities construction project is initiated at the request of a tribe or tribal organization. Consultation with the tribal government is maintained throughout every phase of the construction process, from preliminary design to project completion. Operation and maintenance of these facilities by the American Indian and Alaska Native people, with ongoing technical assistance from IHS ensures the long-term health benefits associated with improved sanitation conditions. In addition to construction work, a number of tribes assumed responsibility for the administration of their own SFC Program. Under Titles I and V of P.L. 93-638, the Indian Self-Determination and

Education Assistance Act, as amended, some tribes from the Anchorage, Billings, California, Nashville, Oklahoma City and Phoenix Areas managed their own SFC Program through 638 Self-Determination contracts and Self-Governance compacts in 2002 (Table 1).

The IHS SFC Program seeks the advice and recommendations of the national Facilities Appropriation Advisory Board and Area-specific Tribal Advisory Committees. These groups review program policies and guidelines and provide input on the future direction of the SFC program.

Figure 4:Manuel Quesada and COSTEP Cindi Baxter inspect the liner to ensure the strip of bentonite clay has been adequately applied.

TABLE 1

Tribes that Managed the SFC Program in FY 2002 Under Title I or V of P.L. 93-638, as Amended

IHS Area	Tribe
Anchorage	Alaska Native Tribal Health Consortium
Billings	Confederated Tribes of Salish & Kootenai (Flathead)
	Rocky Boys (Chippewa-Cree)
California	Hoopa Valley Tribe
Nashville	Penobscot Tribe of Maine
	Mississippi Band of Choctaw Indians
	St Regis Mohawk
	Eastern Band of Cherokee
	Oklahoma CityCherokee
	Nation of Oklahoma
	Absentee Shawnee Tribe of Oklahoma
	Choctaw Nation of Oklahoma
	Chickasaw Nation of Oklahoma
	Wyandotte Tribe of Oklahoma
	* Modoc Tribe of Oklahoma
	The Seminole Nation of Oklahoma (In Chickasaw Compact)
Phoenix	Ely Shoshone Tribe
	* Gila River Pima-Maricopa Indian Community
	* Ak Chin Indian Community of Papago Indians (In Gila River Contract)

* Title I

“The Year” in Review

In FY 2002, over $93.8 million was appropriated for the construction of sanitation facilities. In addition to those appropriated funds, the SFC Program received more than $4 million from the Department of Housing and Urban Development (HUD) and $35 million in contributions from other Federal agencies including the Environmental Protection Agency (EPA) and from non-Federal sources such as tribes and State agencies. With these contributions, the SFC Program’s construction budget for the fiscal year totaled more than $133 million.

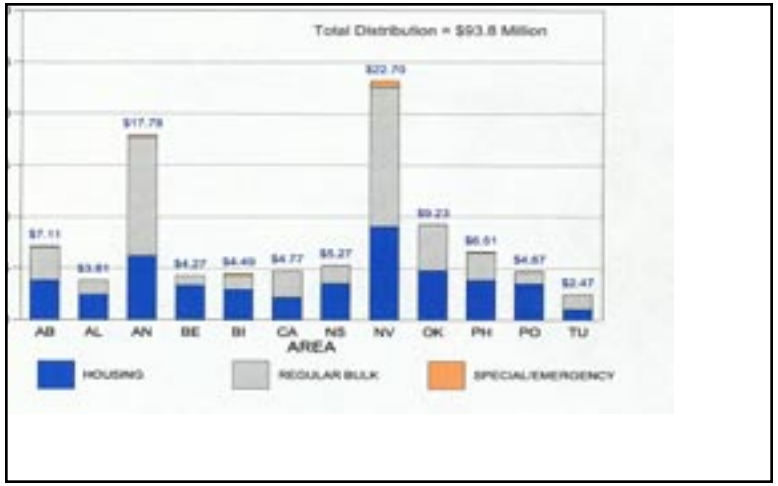


Figure 5: Distribution of SFC Project appropriations, by Area, for FY 2002.

Figure 6: Total distribution of SFC Project funds in FY 2002, including all contributions and HUD funds.

Using the appropriated and contributed funds, the SFC Program initiated 511 projects to provide essential sanitation facilities to an estimated 3,342 new and like-new homes and to 1,217 first service existing homes. Included among the new housing units receiving facilities were 207 HUD-sponsored units, 212 Bureau of Indian Affairs-Home Improvement Program (BIA-HIP) sponsored units, and 2,923 units constructed by tribes, individuals, and other entities. In conjunction with providing sanitation facilities for the first time to new and existing homes, water and sewer systems serving 16,666 previously served homes were upgraded. These statistics are summarized in Table 2 on the following page.

TABLE 2
IHS Sanitation Facilities Construction Program Statistics for FY 2002

SFC Program Budget:

IHS SFC Appropriation =	$	93,827,000
HUD Contributions (Housing + CDBG) =	$	4,456,524
Other Contributions =	$	34,990,798
Total Funding in FY 2002 =	$	133,274,322
Total IHS SFC Appropriations since 1959 =	$	1.91 billion

SFC Projects:

Number of Projects Undertaken in 2002 =	511
Total Number of Projects Undertaken since 1959 =	11,094

Homes Provided Sanitation Facilities in FY 2002:

• Number of New and Like-New Homes Served	
HUD-sponsored Homes =	207
BIA-sponsored Homes =	212
Tribal and Other Homes =	2,923
Sub-Total	3,342
• Number of Existing Homes Served =	1,217
• Number of Previously Served Homes Provided Upgraded Sanitation Facilities =	16,666
Total Number of Homes Served in 2002 =	21,225

*CDBG--HUD Community Development Block Grant program

Homes Provided Sanitation Facilities since 1959:

• Number of New and Like-New Homes	
HUD-sponsored Homes =	60,988
BIA-sponsored Homes =	22,400
Tribal and Other Homes =	68,279
Sub-Total	151,667
• Number of Existing Homes =	102,321
Total Number of Homes Served =	253,988

Sanitation Deficiency System (SDS) Information:

Total Estimated Cost of Sanitation Deficiencies =	$1.578 billion
Total Estimated Cost of Feasible Projects = $900 million	
Total Number of Projects/Phases Identified =	2,877
Number of Feasible Projects Identified = 2,238	
Estimated Total Number of Existing Homes Without Potable Water =	21,479
Estimated Total Number of Homes That Lack Either a Safe Water Supply or Sewage Disposal System, or Both (Deficiency Levels 4 & 5) =	38,376

Figure 7: 8-inch PVC water main installation at Upper LakeRancheria, California.

Four sanitation facilities construction projects are highlighted on the following pages. These projects represent a small fraction of the total construction workload undertaken by the SFC Program. They were selected to illustrate typical cooperative efforts undertaken by IHS, the tribes, and other Federal and state agencies to provide safe water supply, sanitary sewage disposal, and solid waste facilities for American Indian and Alaska Native homes and communities.

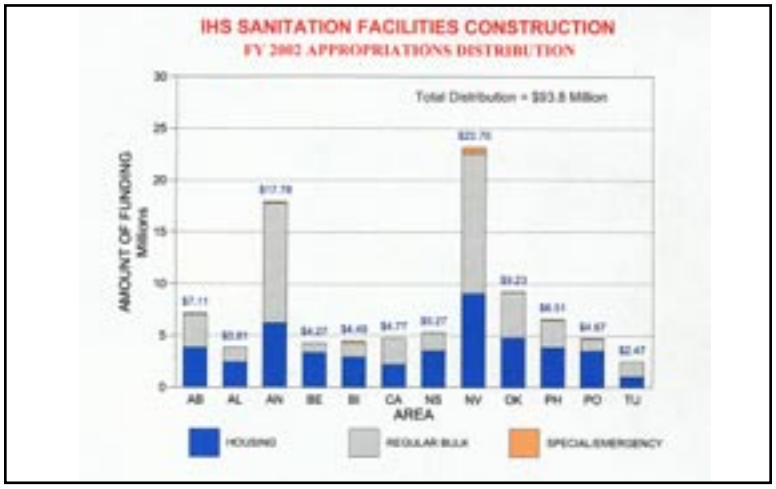


Figure 8: Blasting for the Fox Camp extension in Mexican Hat, Utah.

Taholah Water System Improvements
Quinault Reservation, Washington

For several decades, the Quinault people relied on a spring collection system for their primary drinking water source. However, the yield of the spring fluctuated in response to precipitation and the community was forced to ration water during the dry summer months. Additionally, the spring water source was potentially unsafe due to potential mixing with surface runoff.

Since about 1979, the Quinault Indian Nation (QIN) and the IHS have collaborated with others to develop a more reliable water supply. Attempts to find a good groundwater source near Taholah were unsuccessful. In 1994, the Nation and IHS hired a hydrogeological consultant who found a reliable and quality source of water

Figure 9: Aerial view of Taholah, Washington on the Washington Coast.

Figure 10: 18" steel casing on rollers with expansion joints crossing the Quinault River.

in the Quinault River Valley, located about 5-miles inland from Taholah.

The QIN, IHS, EPA, and Housing and HUD funded multiple projects to bring water from the new wells to the community, to replace the old spring source, and to construct a new water storage reservoir. Construction began in late 1999 and was completed in 2002. The QIN and IHS faced several major technical and project management challenges throughout the project. As an example, the raw water in the new wells was very low in dissolved solids, low in alkalinity, and high in carbon dioxide; conditions that characterize potentially corrosive water. To adjust the water, IHS engineers field evaluated and designed a tower system to strip the carbon dioxide from the raw water and eliminate the corrosive condition. In addition, the designers dealt with a challenging situation

related to power supply. Twenty horsepower motors were required to pump the water from the degasifier treatment systems at the wells through the water transmission line to the community. Under a traditional scenario, the engineer would have specified three-phase power for the pumps. Instead, an innovative single-phase "Written Pole" motor was specified which resulted in a savings of $120,000.

During construction in 2000, contractor performance issues and failed attempts to horizontally drill under the Quinault River resulted in termination of the Federal construction contract for that phase of the project.

In 2001, IHS engineers and QIN staff developed an alternate means of installing the water main across the Quinault River. The QIN constructed the final phase of the water project in summer and fall 2002 through a Public Law 93-638, Subpart J construction contract. The people of Taholah had their new water source online by the end of the year 2002.

Figure11: 4-foot diameter degasifier for stripping of dessolved CO2. Adjusts pH from 6.0 to7.4

Figure 12: 1Crew installing a 10" HDPE water transmission main on a misty morning on the Quinault Indian Reservation

Mille Lacs Band of Ojibwe Sanitation Systems
Mille Lacs Reservation, Minnesota

Access to quality water and safe wastewater disposal is a challenge that faces many small communities. Providing infrastructure to support additional development can be an equally daunting challenge, especially for many small reservation communities.

The Mille Lacs Band of Ojibwe operate and maintain a public water and sewer system serving 12 existing homes near East Lake, Minnesota. The sewer system consisted of a 0.5 acres single-cell lagoon, 1400 feet of PVC gravity sewer, and six manholes. The lagoon had become overgrown with vegetation and it could not meet limits set in the NPDES discharge permit for this small facility.

Figure 13: Existing 0.5 acre single-cel lagoon near East Lake, Minnesota.

The Mille Lacs Band had acquired 80 acres of land adjacent to the existing subdivision and wanted to develop the land for additional residential homes. Through a cooperative agreement between the Mille Lacs Band, United States Department of Agricultural (USDA) Rural Development, and the IHS, a plan was established to correct the deficiencies in the existing lagoon system and increase the capacity of the water and sewer systems to support an additional 20 residential homes.

Figure 14: Removal of biosolids for land application near East Lake, Minnesota.

Phase I of the plan called for the construction of a new 1.0-acre primary cell, renovation of the existing lagoon cell to serve as the secondary cell, and land application of biosolids from the existing lagoon cell.

Figure 15: Renovated secondary cell in existing lagoon in East Lake, Minnesota.

Phase II of the plan called for increased production and treatment capacity from the existing water plant and construction of 2,700 feet of water main, 2,000 feet of gravity sewer main, 900 feet of sewer forcemain, and one duplex wastewater pumping station to serve the additional housing units.

Figure 16: New primary cell in East Lake, Minnesota.

Phase I of the project was completed in late 2001. Bids have been received for Phase II of the project, which is scheduled for completion in 2004. The estimated total project cost for both phases is $529,000.

Marty Water Storage Tank
Yankton Sioux Tribe, South Dakota

The IHS constructed a 75,000-gallon water sphere at the community of Marty, South Dakota as part of IHS Project AB-98-551. This project was funded for $370,000 with IHS Regular funds through the Aberdeen Area Sanitation Deficiency System. The Tribe contributed an equal amount ($370,000) to the project. The project included a 4,000-foot 8-inch water main extension to Marty to improve water flows from the Randall Rural Water System. The total project cost was $740,000.

Figure 17: Existing 0.5 acre single-cel lagoon near East Lake, Minnesota.

The new tank replaced an existing ground level water storage tank. The new tank was needed to address increased water needs for housing development and a new tribal school and dormitories.

The old tank was only 64 feet high. The lower elevation of the old tank often resulted in low pressure for the homes in the northeast part of the community. Because of restricted water flows from the Randall Rural Water System, which fed the old tank, it took several days to re-fill the tank during high demand. The new tank is 102 feet high. The increased height improved water pressure through out Marty. The new water mains provide increased flows and allows the new tank to remain full.

Figure 18: Water sphere components ready to be erected and welded.

A contract to construct the tank was awarded in the amount of $270,000 to Maguire Iron of Sioux Falls, South Dakota on March 8, 2000. A contract modification in the amount of $24,500 was subsequently added to the contract to provide cathodic protection and fencing. These items were included in the original bid advertisement as additive items, but they were not initially awarded due to funding constraints.

Figure 19: Erecting the middle section of the sphere.

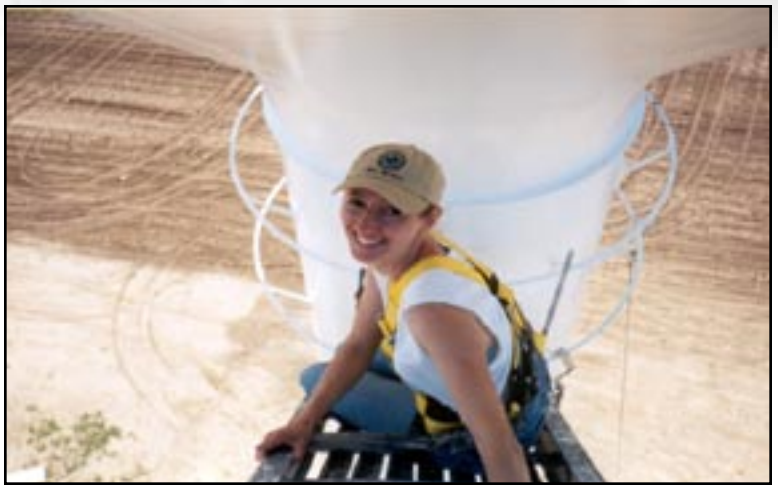


Figure 20: IHS inspector, Julia Smith, checking the completed paint job.

The tank foundation was constructed in July of 2000. The foundation required 36-inch diameter drilled pilings down to depths of 55 feet. A concrete ring wall foundation was constructed on top of the pilings. The welded steel tank sections were fabricated and rolled at the Maguire Iron plant in Sioux Falls. The sections of the tank were welded, blasted, and shop primed in the controlled environment of their plant prior to being shipped to the job site. The contractor erected the sections using a crane. They were erected atop the foundation and welded together in October of 2000 and the new tank went online July 2001.

Figure 21: Completed water sphere; old tank will be abandoned.

Lac du Flambeau Sanitation Systems
Lac du Flambeau, Wisconsin

Figure 22: Rob Thomson, Emerson Coy, and James Valliere with the lagoon project sign, Lac du Flambeau, MI.

The Lac du Flambeau Band of Lake Superior Chippewa Indians (LDF), Coleman Engineering Company Incorporated (CEC), USDA Rural Development (RDA), and the Bemidji Area IHS partnered together to complete $4 million in upgrades to the LDF sewer and water facilities. The upgraded facilities were designed to provide community sewer to approximately 100 existing homes (some with failing septic systems), support over 60 new homes expected to built in the next three years, and handle a future demand of an additional 100 new homes.

Four unique phases composed the work completed in 2001/ 2002 including: 1) a lagoon upgrade, 2) sewer/water main extensions and effluent sewer system with recirculating sand filter, 3) a pump house upgrade, and 4) a 250,000 gallon water tower.

Figure 23: James Valliere,LDF Assistant Operator, and contractor setting up hoist to remove the grinder pump, Lac du Flambeau, MI.

Lagoon Upgrade

The original Lac du Flambeau lagoon was constructed in 1963 and was modified in 1978 and 1993 to add additional cells. The lagoon capacity is 35 million gallons with a treatment capacity of approximately 130,000 gallons per day (gpd). To increase capacity to 180,000 gpd, the Tribe, with technical assistance from IHS, installed four Pond Doctor units.

The Pond Doctor is a solar paneled aerator that uses an impellor to bring liquid from the lower layers of the lagoon to the surface allowing oxygen transfer between the liquid and the atmosphere.

Figure 24: Pond Doctor unit being inspected by contractor.

As additional liquid is brought to the surface, the aerated liquid is pushed down creating a larger aerated zone for increased biological treatment.

Figure 25: Pond Doctor unit prior to being set in the middle of the pond.

Three Pond Doctor units were installed in the 18.4 acre primary cell and one unit was installed in the 10 acre secondary cell. With the Pond Doctors, the lagoon removes an average of 96.3% of the biochemical oxygen demand (BOD_5) and 93.4% of the total suspended solids (TSS) for an average water quality of 14.1 mg/l BOD_5 and 17.4 mg/l TSS (tests taken monthly for one year following the installation of the Pond Doctor units).

Figure 26: Contractor completing sampling and analysis of lagoon effluent.

Sewer and water extensions and effluent sewer system with recirculating sand filter

The IHS teamed with Coleman Engineering Company to design and manage a $2.6 million contract for the construction of five miles of water and sewer main extensions with two new lift stations. Portions of the sewer main were designed for depths greater than 25 feet peaking in a 35 foot deep lift station serving over 100 homes.

Figure 27: Construction of the drainfield for the sand filter treatment system.

The homeowners on Wayman Lane, Lac du Flambeau, had failing septic systems and, due to distance, were unable to connect to the existing community sewer system. The Tribe and IHS decided to design and construct a small recirculating sand filter, approximately 2400 gpd, to serve 11 homes. An effluent sewer system was used in order to maintain flexibility in construction due to the possibility of discovering archeological sites. The LDF Tribal Historic Preservation Office provided construction monitoring throughout the entire project.

Figure 28: Wayman Lane sand filter treatment system.

Figure 29: Unloading Manholes for sewer extension.

The Tribe and IHS agreed that additional water supply was required to meet the current needs of the reservation.

Figure 30: Bernie Nooyan, contractor, welding on a new pitless adapter on the community well for Lac du Flambeau.

Two wells located on the west side of the reservation were perfect candidates as they were only pumping at about 50% of their capable yield. New pumps, pitless adapters, drop pipe, and motor starters were installed to increase the capacity of each well from 30 gpm to over 65 gpm each.

Figure 31: Interior piping of the Lac du Flambeau pumphouse

Figure 32: Pump test apparatus for the West Flambeau pumphouse.

250,000 Gallon Water Tower.

Prior to this project, the Lac du Flambeau Tribe had 250,000 gallons in water storage with an average daily demand of 186,000 gallons. The projected water usage for the three year design plan is approximately 209,000 gpd. In order to accommodate the increased demand and provide for two days of storage, the Tribe and IHS collaborated on the design and construction of a 250,000 gallon elevated water tower located on the west side of the reservation.

Figure 33: Construction of the 250,000 gallon water tower.

Figure 34: Completed 250,000 gallon elevated waste tower.

Sanitation Facilities and Health

Protecting the health of and preventing disease among American Indian and Alaska Native populations are primary IHS objectives. In the Indian Health Care Improvement Act (P.L. 94-437, as amended), the Congress declared that "...it is in the interest of the United States, that all Indian communities and Indian homes, new and existing, be provided with safe and adequate water supply systems and sanitary sewage waste disposal systems as soon as possible." Citing this policy, the Congress reaffirmed the primary responsibility and authority of the IHS "...to provide the necessary sanitation facilities..." as authorized under P.L. 86-121.

Figure 35: Arizona Rural Development engineer, James Maes, inspecting the Hon Dah regional wastewater treatment facility, Fort Apache Reservation, Arizona.

A Report to Congress by the Comptroller General, dated March 11, 1974, noted that American Indian and Alaska Native families living in homes with satisfactory environmental conditions placed fewer demands on IHS' primary health care delivery system; i.e., those with satisfactory environmental conditions in their homes required approximately 25 percent of the medical services required by those with unsatisfactory environmental conditions.

Figure 36: Initial site preparation of the 35 acre Hon Dah wastewater facility, Fort Apache Reservation, Arizona.

The IHS considers the provision of sanitation facilities to be a logical extension of its primary health care delivery efforts. The availability of essential sanitation facilities is critical to breaking the chain of waterborne communicable disease episodes. Properly designed and operated facilities can reduce the incidence of disease by eliminating waterborne bacteria, viruses, and parasites which cause

such illnesses as salmonellosis, typhoid fever, cholera and giardiosis. In addition, many other communicable diseases, including hepatitis A, shigella, and impetigo are associated with the limited hand washing and bathing practices often found in households lacking adequate water supplies. This is particularly true for families that haul water.

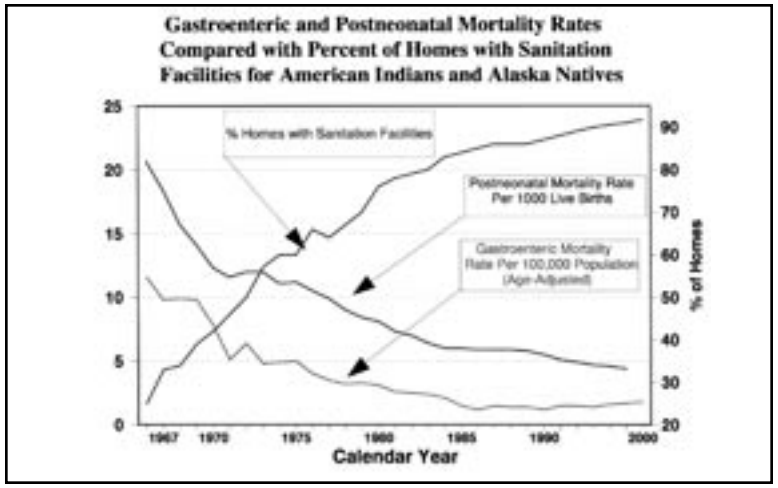


Figure 37: Graph of gastroenteric and postneonatal death rates versus the number of Indian homes with sanitation facilities.

The availability of adequate sanitation facilities has value beyond disease intervention. Safe drinking water supplies and adequate waste disposal facilities are essential preconditions for most health promotion and disease prevention efforts. Consistently and optimally fluoridated drinking water, which can virtually eliminate tooth decay among children, is an example of this public health principle. Efforts by other public health specialists, such as nutritionists and alcoholism counselors, are enhanced if safe drinking water is readily available. Lack of indoor plumbing (sanitation facilities) is a significant risk factor for falls, a leading cause of injury related deaths for elders. Home health care nursing services are much more effective when safe water and adequate wastewater disposal systems are in place.

Several diseases are readily transmitted by contaminated water supplies, and those of greatest importance are infectious hepatitis; typhoid, cholera, and paratyphoid fevers; and dysenteries. In 1955, more than 80 percent of American Indians and Alaska Natives were living in homes without essential sanitation facilities. The age-adjusted gastrointestinal disease death rate for American Indians and Alaska Natives was 15.4 per 100,000 population. This rate was 4.3 times higher than that for all other races in the United States. In 1995, by contrast, the age-adjusted gastrointestinal disease death rate had decreased significantly to 1.7 per 100,000. A major factor in this significant gastrointestinal disease rate reduction is the SFC Program's efforts to construct water supply and waste disposal facilities. The 1995 rate is still 40 percent higher than the rate for all races in the U.S.

The SFC Program is a significant contributor to the improved health status of American Indians and Alaska Natives as clearly indicated by the decrease in the gastrointestinal disease death rate and concurrent increase in life expectancy.

Program Operations

The SFC Program is part of the IHS Office of Environmental Health and Engineering. The SFC Program's activities are supported by engineers, sanitarians, engineering technicians, clerical staff, and skilled construction workers.

There is an SFC Program in each of the 12 IHS Area Offices. The Program's Headquarters component, located in Rockville, Maryland, assists the Area Offices by establishing policies, providing guidance to ensure consistent and equitable program implementation nationwide, and interfacing with other Federal agencies.

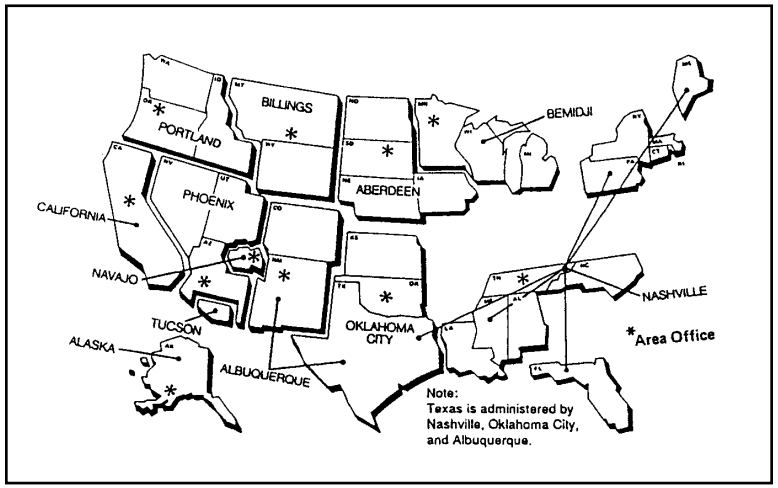


Figure 38: Location of indian Health Service Area Offices.

The SFC Program works cooperatively with tribes and tribal organizations, tribal housing authorities, and with many governmental agencies, such as HUD, BIA, EPA, and USDA Rural Utility Service (formally Farmers Home) toward achieving its sanitation facilities construction objectives. An example is the funding for sanitation facilities construction in support of new and renovated HUD homes typically made available to the SFC Program by HUD through tribes and Indian housing authorities. Agreements among the tribes, Indian housing authorities, IHS, and HUD enable the transfer of HUD funds to the SFC Program for construction of necessary water and sewer facilities. Congress authorized IHS to accept the HUD contributions.

Figure 39: Graph of gastroenteric and postneonatal death rates versus the number of Indian homes with sanitation facilities.

Similar agreements among the tribes, IHS, and the EPA Indian Set-Aside Grants (ISA) Program enable the EPA to contribute the ISA wastewater funds to the SFC Program. States do not have jurisdiction on trust lands and except for Alaska, provide relatively little assistance to Indian

tribes and reservations for the construction of sanitation facilities. The State of Alaska, through its Village Safe Water program, participates in many jointly funded IHS construction projects in Alaska Native communities.

The SFC Program's efforts to provide sanitation facilities for American Indian and Alaska Native homes and communities benefits more than 560 Federally recognized tribes and tribal organizations located in the 33 Reservation States. Sanitation facilities are provided, at the request of tribes, bands, or groups, for homes owned and occupied by American Indians and Alaska Natives who are eligible for assistance. Provision of water, wastewater, and solid waste facilities for commercial and industrial purposes is not authorized under P.L. 86-121; therefore, such needs are not addressed by the SFC Program.

Figure 40: Flushing new water service line in Cane Valley, Navajo Nation.

Non-HUD sanitation facilities projects that are approved for implementation are classified under one of the following categories: 1) projects to assist new and like new Indian housing (Housing Support Projects); 2) projects to serve existing homes and communities (Regular Projects); and 3) special/emergency projects.

Figure 41: Construction of a 88,000 gallon water tank in White Mesa, Arizona.

Housing Support Projects provide sanitation facilities for new homes and homes in like new condition for eligible Indian and Alaska Native families. These projects typically serve Indian homes being constructed or rehabilitated by the BIA-HIP, tribes, individual homeowners, or other nonprofit organizations.

Regular Projects provide sanitation facilities for existing Indian homes and communities. The SFC Program has established a Sanitation Deficiency System (SDS) for identifying and prioritizing projects to serve homes

Figure 42: Old Sherwood Valley Rancheria pumphouse and treatment building construction, California.

and communities with unmet water, sewer, and solid waste needs. This system is updated annually, and the information and funding requirements are submitted each year to the Congress in accordance with Indian Health Care Improvement Act requirements. A summary of the inventory of sanitation deficiencies is presented in the following pages.

Special/Emergency Projects provide sanitation facilities for special studies and emergency situations. Emergency projects typically involve community sanitation facilities which have undergone, or are expected to experience, sudden wide-spread failure that will directly affect the public health. Funding for special/emergency projects is very limited and all projects must be approved by the SFC Program Headquarters Office. The average project funding level is $20,000 to $50,000.

In addition to providing direct services for the construction of sanitation facilities, the SFC Program provides technical assistance on many issues related to construction and operation and maintenance of sanitation facilities.

Technical assistance, such as reviews of engineering plans and specifications for on-site sanitation facilities for new home construction, is routinely provided to tribes and Indian housing authorities. Technical reviews of feasibility studies and grant proposals are routinely provided to tribes by the SFC Program for a wide range of civil and sanitation facilities engineering projects related to Indian Housing. The amount or degree of technical assistance provided depends on available resources.

Figure 43: Construction of a new headworks and grit removal at San Juan Pueblo, New Mexico.

Upon project completion, the facilities constructed under the SFC Program are owned and operated by the tribe, individual homeowner, or other responsible non-Federal entity. The IHS provides technical assistance to the owners of the new sanitation facilities and provides training on proper operation and maintenance of the new facilities. Homeowners who receive individual sanitation facilities are instructed on the proper operation and maintenance of their newly installed wells and/or septic systems, and tribal operators are instructed on the correct operation and maintenance of community water and sewer facilities. The latter may include training in proper operation and maintenance of chlorination and fluoridation equipment, pumps, and motor control systems for community water supply facilities, and proper operation and maintenance of sewage collection systems, lift stations, and wastewater treatment facilities.

The SFC Program also provides technical assistance to tribes in the development of tribal utility organizations for operation, maintenance, and management of community water and sewer facilities. This assistance may include development of rate structures to determine appropriate customer water and sewer fees.

As additional and more stringent environmental regulations regarding safe drinking water, sewage treatment and disposal, and solid waste disposal are issued, the IHS will continue providing technical support and consultation on environmentally-related public health issues to American Indian and Alaska Native tribes and individual homeowners.

Figure 44: Pacific Underground Construction Crew pouring 2-sack slurry mix within the country roadway right-of-way, California.

Sanitation Deficiencies

The Indian Health Care Improvement Act (IHCIA) requires the IHS to have a funding plan to provide safe water supply and sewage and solid waste disposal facilities to existing American Indian and Alaska Native homes and communities, and to new and renovated homes. In accordance with those requirements, the SFC Program annually estimates the total need to provide safe and adequate sanitation facilities for American Indian and Alaska Native homes and communities.

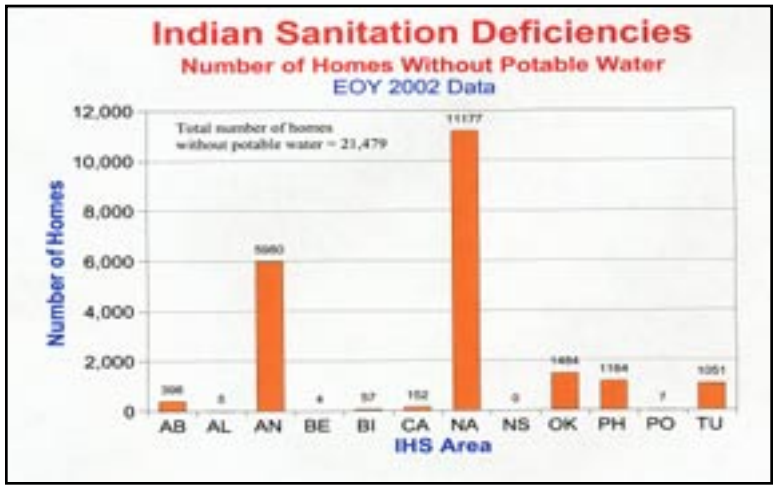


Figure 45: Number of Inian homes without potable water, by area.

Sanitation deficiencies are reported as proposed projects or project phases. The current inventory of sanitation deficiencies identified more than 2,870 sanitation facilities construction projects or project phases at an estimated cost of $1.6 billion. These projects represent the universe of need eligible for IHS funding. However, some projects are prohibitively expensive to construct and/or operate and are considered to be economically infeasible. Currently, 2,238 of the identified projects are considered to be economically feasible with an estimated cost of $900 million.

In an effort to reflect the relative impact on health of various water supply, sewage disposal, and solid waste deficiencies to be addressed, sanitation deficiency levels are determined for each project or project phase. The IHCIA defines the following deficiency levels:

Level I: The deficiency level describing an Indian tribe or community with a sanitation system that complies with all applicable water supply and pollution control laws, and in which the deficiencies relate to routine replacement, repair, or maintenance needs.

Level II: The deficiency level that describes an Indian tribe or community with a sanitation system that complies with all applicable water supply and pollution control laws, and in which the deficiencies relate to capital improvements that are necessary to improve the facilities in order to meet the needs of such tribe or community for domestic sanitation facilities.

Level III: The deficiency level that describes an Indian tribe or community with a sanitation system that has an inadequate or partial water supply and a sewage disposal facility that does not comply with applicable water supply and pollution control laws, or has no solid waste disposal.

Level IV: The deficiency level that describes an Indian tribe or community with a sanitation system which lacks either a safe water supply system or a sewage disposal system.

Level V: The deficiency level that describes an Indian tribe or community that lacks a safe water supply and a sewage disposal system.

The deficiency level assigned to a project is determined by the deficiencies of existing facilities. Projects are divided into phases, as appropriate, to provide logically independent and functional projects that can be funded in one year and which generally address one level of deficiency. Each proposed project or project phase will not necessarily bring the facilities for a community or tribe to level I deficiency or better. However, the combination of all projects reported will bring all facilities to deficiency level I or better.

These deficiencies represent an enormous challenge, especially because the resources to meet them are finite. Existing sanitation facilities require upgrading while efforts continue towards providing services to many yet unserved and mostly isolated homes.

Figure 46: An Eljen in drain leachfield system installed for a new homeowner at Taos Pueblo, New Mexico.

Figure 47: Waterline construction in Monument Valley, Arizona.

In cooperation with the Office of Management and Budget (OMB), a Common Measure was developed with the Rural Utility Service (RUS), the Bureau of Reclamation (BOR), the Environmental Protection Agency (EPA), and the IHS to allow direct comparisons between rural water programs within the federal government. The Common Measures agreed upon were the number of connections and the population served per million dollars of total project cost. It was recognized that BOR and IHS are direct service programs to a specific population, and EPA and RUS are grant/loan programs that can leverage funding with both of these programs mostly providing strictly upgraded services. The data is reported as east and west, excluding Alaska. The IHS compared favorably in FY 2001 with the BOR having provided 174 and 212 (east and west) services per million dollars.

The Program Assessment Rating Tool (PART) is an OMB initiative performed on the SFC program in 2002. The PART rates a program's purpose, design, strategic planning, program management and program results. The SFC program scored 80%, which is a very acceptable score (second highest within the Department of Health and Human Services) and supports the funding increase in 2004. A major weakness of the SFC program is that it has not had an independent program review since 1974, and there has not been a recent benefit cost analysis on the value of sanitation facilities for AI/AN homes. The SFC program is working with other parts of the Department of Health and Human Services on an independent evaluation of the program. Additionally, a new GPRA measure along with a long term performance goal will be developed related to the percentage of Deficiency Level 4 and Deficiency Level 5 homes served.

Tables 3 thru 8 and corresponding charts illustrate the type, geographic location and associated costs of the sanitation deficiencies.

Table 3
Number of Homes at Each Deficiency Level
by Area

AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	TOTAL
ABERDEEN	1,549	5,047	12,729	316	435	20,076
ALBUQUERQUE	1,166	7,261	4,129	1,270	18	13,844
ANCHORAGE	245	1,484	10,379	945	4,050	17,103
BEMIDJI	4,199	5,056	4,619	1,038	112	15,024
BILLINGS	2,211	3,534	7,213	505	16	13,479
CALIFORNIA	22	1,139	4,147	4,233	412	9,953
NAVAJO	11,773	7,486	28,562	3,122	10,871	72,434
NASHVILLE	1,205	2,944	5,395	1,024	52	10,620
OKLAHOMA CITY	55,995	1,077	21,158	2,353	512	81,095
PHOENIX	6,056	6,484	6,903	4,214	859	24,516
PORTLAND	782	5,248	6,308	483	9	12,830
TUCSON	0	1,215	2,664	466	1,061	5,406
TOTAL	85,203	47,975	114,206	19,969	18,407	296,380

Table 4
Number of Homes Requiring Assistance
By Type of Facility

AREA	WATER	SEWER	SOLID WASTE	Eligible Homes
ABERDEEN	12,712	7,453	7,422	20,076
ALBUQUERQUE	12,510	7,110	2,134	13,844
ANCHORAGE	13,635	12,607	15,566	17,103
BEMIDJI	8,289	5,012	2,309	15,024
BILLINGS	7,876	4,186	7,310	13,479
CALIFORNIA	8,644	6,712	6,519	9,953
NAVAJO	31,334	15,402	38,295	61,814
NASHVILLE	9,111	8,646	7,527	10,620
OKLAHOMA CITY	5,331	2,486	20,501	81,095
PHOENIX	15,771	8,106	6,513	24,516
PORTLAND	6,013	5,612	9,519	12,830
TUCSON	5,399	1,688	4,696	5,406
TOTAL	136,625	85,020	128,311	285,760

Table 5

Project Cost Estimate by Deficiency Level

Feasible Projects

AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	TOTAL
ABERDEEN	$0	$23,555,000	$25,130,000	$3,275,000	$5,158,000	$57,118,000
ALBUQUERQUE	$0	$28,986,800	$16,796,000	$4,645,636	$213,600	$50,642,036
ANCHORAGE	$0	$23,222,153	$138,851,430	$144,261,309	$105,000	$306,439,892
BEMIDJI	$0	$10,674,414	$5,256,135	$1,739,238	$0	$17,669,787
BILLINGS	$0	$11,882,500	$4,628,000	$1,280,000	$107,000	$17,897,500
CALIFORNIA	$0	$2,864,350	$5,909,000	$7,828,300	$0	$16,601,650
NAVAJO	$0	$25,527,900	$11,573,805	$7,638,460	$197,921,868	$242,662,033
NASHVILLE	$0	$13,626,500	$13,271,900	$9,077,550	$0	$35,975,950
OKLAHOMA CITY	$0	$1,619,000	$7,439,060	$14,925,703	$1,434,052	$25,417,815
PHOENIX	$0	$38,962,000	$13,860,000	$7,035,000	$11,949,000	$71,806,000
PORTLAND	$0	$14,745,856	$14,226,258	$1,914,400	$0	$30,886,514
TUCSON	$0	$4,817,200	$6,886,500	$5,101,000	$10,447,000	$27,251,700
TOTAL	$0	$200,483,673	$263,828,088	$208,721,595	$227,335,520	$900,368,876

Table 6

Project Cost Estimate by Deficiency Level

Total Data Base

AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	TOTAL
ABERDEEN	$813,000	$43,395,000	$41,990,000	$3,918,000	$5,449,000	$95,565,000
ALBUQUERQUE	$3,818,000	$58,895,800	$20,823,000	$8,615,002	$266,100	$92,417,902
ANCHORAGE	$14,473,190	$75,516,004	$227,846,317	$312,314,007	$2,220,802	$632,370,319
BEMIDJI	$6,921,690	$20,659,289	$6,466,135	$3,731,488	$0	$37,778,602
BILLINGS	$230,000	$12,012,500	$5,285,000	$1,280,000	$107,000	$18,914,500
CALIFORNIA	$0	$4,008,350	$19,142,000	$14,110,000	$0	$37,260,350
NAVAJO	$2,446,250	$150,742,699	$13,404,315	$15,130,680	$206,396,367	$388,120,311
NASHVILLE	$1,069,000	$17,795,500	$15,919,650	$10,989,550	$0	$45,773,700
OKLAHOMA CITY	$9,500	$1,938,500	$9,037,060	$15,878,703	$1,434,052	$28,297,815
PHOENIX	$79,000	$54,575,000	$18,413,000	$9,281,000	$22,249,000	$104,597,000
PORTLAND	$0	$18,200,824	$31,080,558	$3,217,200	$0	$52,498,582
TUCSON	$0	$8,447,422	$10,476,900	$10,130,000	$15,144,000	$44,198,322
TOTAL	$29,859,630	$466,186,888	$419,883,935	$408,595,629	$253,266,321	$1,577,792,403

Table 7

Cost Estimates by Type of Needed Facility by IHS Area

Feasible Projects

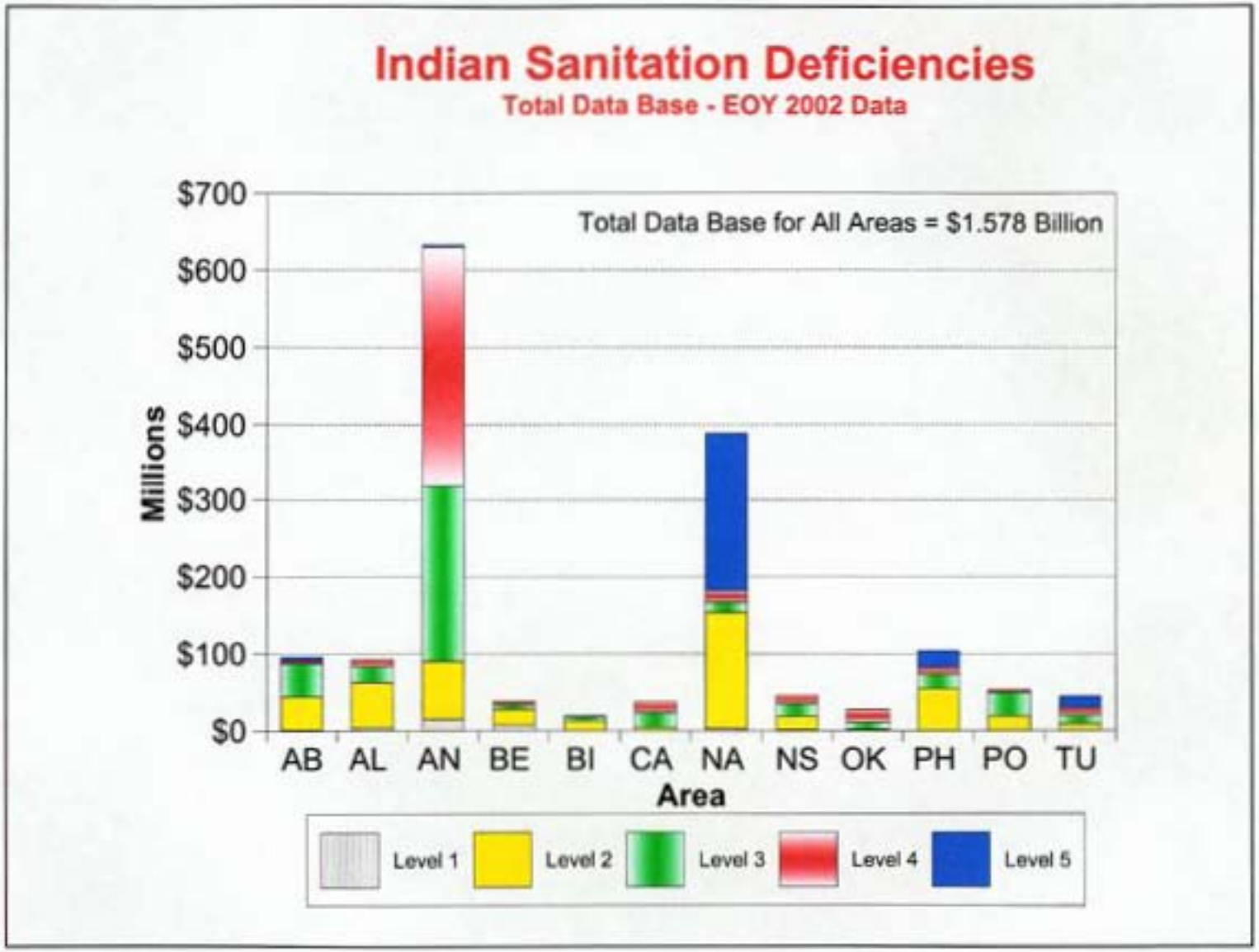
AREA	WATER	SEWER	SOLID WASTE	O&M	TOTALS
ABERDEEN	$31,111,000	$15,372,000	$9,920,000	$715,000	$57,118,000
ALBUQUERQUE	$35,419,436	$11,452,650	$3,676,000	$93,950	$50,642,036
ANCHORAGE	$145,272,955	$110,727,621	$50,439,316	$0	$306,439,892
BEMIDJI	$14,142,383	$2,476,104	$1,051,300	$0	$17,669,787
BILLINGS	$9,504,500	$5,393,000	$3,000,000	$0	$17,897,500
CALIFORNIA	$9,292,300	$3,702,850	$3,441,500	$165,000	$16,601,650
NAVAJO	$165,016,773	$69,912,535	$7,732,725	$0	$242,662,033
NASHVILLE	$16,935,150	$15,239,500	$3,673,560	$127,740	$35,975,950
OKLAHOMA CITY	$16,094,876	$6,305,629	$3,017,310	$0	$25,417,815
PHOENIX	$40,724,000	$24,045,000	$6,781,000	$256,000	$71,806,000
PORTLAND	$19,827,143	$6,102,455	$4,949,616	$7,300	$30,886,514
TUCSON	$15,566,000	$8,832,200	$2,634,200	$219,300	$27,251,700
TOTAL	$518,906,516	$279,561,544	$100,316,527	$1,584,290	$900,368,876

Table 8

Cost Estimates by Type of Needed Facility by IHS Area

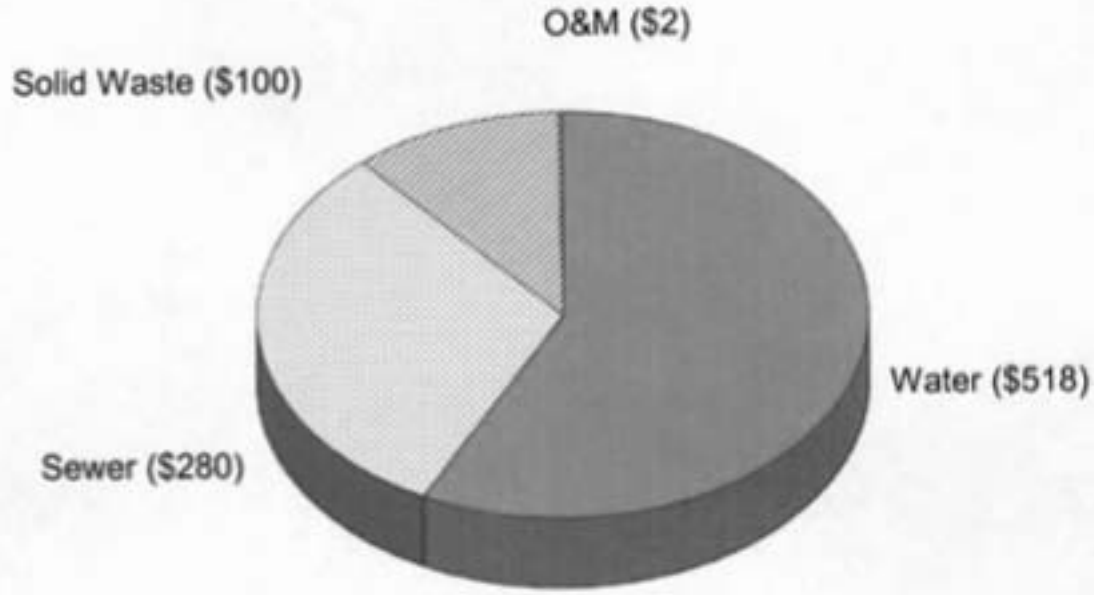
Total Data Base

AREA	WATER	SEWER	SOLID WASTE	O&M	TOTALS
ABERDEEN	$68,199,000	$16,731,000	$9,920,000	$715,000	$95,565,000
ALBUQUERQUE	$54,843,302	$33,659,650	$3,821,000	$93,950	$92,417,902
ANCHORAGE	$296,340,126	$247,083,775	$88,946,417	$0	$632,370,319
BEMIDJI	$22,200,648	$14,288,854	$1,249,100	$40,000	$37,778,602
BILLINGS	$9,734,500	$6,180,000	$3,000,000	$0	$18,914,500
CALIFORNIA	$14,913,300	$17,375,550	$4,786,500	$185,000	$37,260,350
NAVAJO	$302,672,213	$75,655,373	$9,792,725	$0	$388,120,311
NASHVILLE	$19,149,650	$22,706,250	$3,790,060	$127,740	$45,773,700
OKLAHOMA CITY	$17,894,376	$7,386,129	$3,017,310	$0	$28,297,815
PHOENIX	$54,563,000	$42,987,000	$6,781,000	$266,000	$104,597,000
PORTLAND	$35,893,943	$11,560,723	$4,976,616	$67,300	$52,498,582
TUCSON	$28,691,622	$10,857,200	$4,040,200	$609,300	$44,198,322
TOTAL	$925,095,680	$506,471,504	$144,120,928	$2,104,290	$1,577,792,403


Indian Sanitation Deficiencies
Total Data Base - EOY 2002 Data
Total Data Base for All Areas = $1.578 Billion
$700
$600
$500
$400
$300
$200
$100
$0
Millions
AB AL AN BE BI CA NA NS OK PH PO TU
Area
Level 1
Level 2
Level 3
Level 4
Level 5

Current 10-Year Funding Plan to Address Indian Sanitation Deficiencies

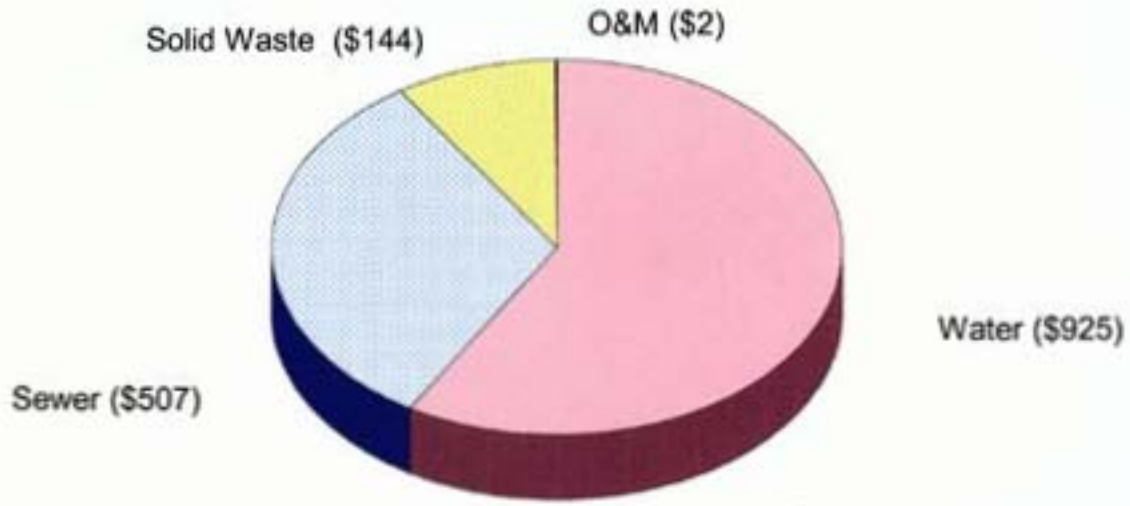
Cost Estimate by Type of Facilities
EOY 2002 Data - Economically Feasible Projects



Total IHS Estimate = $ 900 Million

(Costs Shown in Millions of Dollars)

Cost Estimate by Type of Facilities
EOY 2002 Data- Total Data Base



Total IHS Estimate = 1.578 Billion

(Costs Shown in Millions of Dollars)

The Challenge Ahead

The ultimate goal of the SFC Program is to provide adequate water and sewer facilities for all existing Indian homes. However, despite current funding levels, there are numerous factors that will continue to create additional sanitation facility needs in the future. These factors include population growth and the corresponding additional need for homes. The number of Indian families is increasing faster than new homes are being constructed, making it especially difficult to meet critical sanitation needs in many Indian communities.

Another factor is the need to upgrade or replace existing sanitation facilities when their useful design life is reached; the IHS began providing water and sewer systems to American Indian and Alaska Native communities over 40 years ago. This factor becomes increasingly critical as the reliability decreases and the cost of operating and maintaining older sanitation facilities increase. Despite an IHS emphasis on designing systems that are simple and economical to operate and maintain, the reliability of most community water and sewer systems in Indian country needs to be improved.

More stringent environmental standards and more difficult site conditions will challenge the SFC Program as it endeavors to provide needed sanitation facilities in years to come. Standards for public water supply systems, solid waste disposal facilities, and sewage treatment facilities are continually being modified by legislation and regulation. The impact of these changes is generally most severe on small utility systems such as those serving American Indians and Alaska Natives. As a result of more stringent regulations, small systems will cost more to build and operate.

In the future, the technical and managerial skills of IHS and tribal staff to design, construct, and operate needed sanitation facilities in an environment with more fiscal and regulatory challenges will be tested. A true partnership among Tribes, Congress and IHS is needed if we are to meet these challenges successfully.

Figure 48: Onieda kids from New York enjoy the summer heat with fresh water.

IHS Area SFC Program Directory

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