EPA North Indian Bend Wash Superfund Site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • APRIL 2001

EPA Proposes Plan to Address Groundwater Contamination at Site

The U. S. Environmental Protection Agency (EPA) is proposing a remedy for addressing the remaining environmental contamination at the North Indian Bend Wash study area (NIBW) and seeks your comments. NIBW is part of the overall Indian Bend Wash Superfund Site and is located primarily in Scottsdale, Arizona (see Figure 1, Page 3). This fact sheet, known as a Proposed Plan, describes the cleanup alternatives that have been recently evaluated and identifies EPA's preferred alternative. EPA is seeking public comments on this Proposed Plan as part of the public participation requirements of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Although groundwater and soil cleanup remedies for the NIBW site have been in effect for a number of years, the remedies selected by EPA in 1988 and 1991 did not completely stop the migration of contamination in the groundwater. Based upon the information currently available to EPA, this latest effort will put a remedy in place that stops the migration and cleans up the contamination. This remedy will include and supplement previous cleanup decisions.

In November 2000, the potentially responsible parties (PRPs) completed a Feasibility Study Addendum (FSA) for NIBW

COMMUNITY MEETING

WEDNESDAY, MAY 9, 2001
7:00 P.M.
SCOTTSDALE COMMUNITY COLLEGE
TURQUOISE ROOM (STUDENT CENTER)
9000 EAST CHAPARRAL ROAD
SCOTTSDALE, ARIZONA

PUBLIC COMMENT PERIOD

APRIL 30, 2001 - JUNE 28, 2001

About the Proposed Plan

The U. S. Environmental Protection Agency (EPA), the Arizona Department of Environmental Quality (ADEQ), and the Arizona Department of Water Resources (ADWR) have been involved with the potentially responsible parties in the cleanup activities at the NIBW site since the early 1980s. There are presently two NIBW Consent Decrees with the responsible parties for work required by two previous Records of Decision (RODs) issued by EPA in 1988 and 1991. The Feasibility Study Addendum (FSA) fulfills a requirement of the first Consent Decree for a supplemental study to evaluate the effectiveness of the overall groundwater remedy and methods to enhance its effectiveness.

EPA has developed this Proposed Plan in consultation with ADEQ and ADWR to allow the public to review and comment on all the cleanup alternatives evaluated in the FSA. This Proposed Plan was written in accordance with section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The function of the Proposed Plan is to:

1. Provide basic background information;
2. Identify the preferred alternative for remedial action for NIBW and the reasons for the preference;
3. Describe the other cleanup options considered;
4. Solicit public review and comment on all of the alternatives described;
5. Provide information on how the public can be involved in the remedy selection process;
6. Explain the relationship of the FSA to the Proposed Plan; and
7. Describe the importance of public input in the remedy selection process.

Site Background

The entire area of the Indian Bend Wash Superfund Site covers approximately 13 square miles in Scottsdale and Tempe, Arizona. The site was divided into two areas known as the Indian Bend Wash Area - North (NIBW) and the Indian Bend Wash Area - South (SIBW) (See Figure 1, Page 3). This fact sheet focuses on NIBW only. More information on SIBW can be obtained at the information repository located at the Tempe Public Library, 3500 South Rural Road, Tempe, AZ 85282.

There are numerous industrial facilities located in the NIBW area. Up until the 1970s, before our current environmental regulations existed, industrial solvents containing volatile organic compounds (VOCs) were typically disposed of directly onto the ground or in dry wells. These disposal practices, along with other releases, resulted in the present groundwater contamination at NIBW. At the NIBW Site, the groundwater is present in three separated levels or layers. These layers are referred to as the Upper, Middle, and Lower Aquifers or Alluvium units (see Figure 2, Page 3).

Land use in the vicinity of NIBW includes residential, industrial/commercial, agricultural, public and private recreational (parks, golf courses, playing fields, etc.), undeveloped open space, and waterways. Within the NIBW Site boundaries, approximately more than half of the land is used for residential purposes. The remaining land is used for either industrial/commercial purposes or recreational purposes. Areas surrounding NIBW, particularly those to the east, include more agricultural land uses and undeveloped open space.

Groundwater contamination at NIBW was discovered in 1981 when elevated levels of VOCs including trichloroethylene (TCE), perchloroethylene (PCE) and chloroform were found in several Scottsdale-area drinking water wells. As a result, local water providers stopped using those wells for drinking water.

EPA and ADEQ have been involved in investigations and cleanup activities at NIBW since the initial discovery of VOCs in the groundwater in 1981. The entire Site, including both NIBW and SIBW, was placed on EPA's National Priorities List (NPL), or Superfund list, in 1983.

which evaluated seven alternative approaches to improve the existing groundwater and soil remediation systems. This Proposed Plan evaluates the seven alternatives from the FSA plus a variation of one of the FSA alternatives for a total of eight alternatives. To be considered as a possible remedy for a hazardous waste problem, an alternative must meet EPA's two basic or "threshold" criteria. These criteria require that the remedy (1) protect human health and the environment and (2) comply with the applicable or relevant and appropriate requirements (ARARs) of the various government entities with authority over the site. Of the eight alternatives introduced in this Proposed Plan, only seven alternatives meet these two threshold criteria. In addition to these two criteria, there are seven additional criteria that EPA must consider when evaluating a remedy. All nine criteria are discussed later in this fact sheet (See "EPA's Remedy Selection Criteria" on Page 8).

EPA's Preferred Alternative

After evaluating these seven cleanup alternatives according to the nine evaluation criteria, EPA prefers Alternative 3A as the remedy that provides the best balance among the criteria. Alternative 3A calls for groundwater extraction from several different parts of NIBW using existing and one new extraction well, treatment of all extracted groundwater, groundwater monitoring, and periodic updates of the groundwater model. EPA believes that Alternative 3A provides the best overall containment, extraction, treatment, and monitoring of NIBW's contaminated groundwater. EPA identifies its preferred remedy so that the public can comment on it along with the other alternatives considered. All cleanup alternatives considered, including EPA's preferred alternative, are described in this fact sheet. EPA will consider and respond to significant comments on this Proposed Plan before selecting the final remedy for NIBW.

Opportunity for Public Comment

EPA will be accepting comments on this Proposed Plan from April 30, 2001 through June 28, 2001. During that period, you can submit written comments or you can have your oral comments recorded at the Proposed Plan Public Meeting scheduled for May 9, 2001.

After EPA reviews and responds to public comments, we will formally announce the selected remedy in a document called an Amended Record of Decision (Amended ROD) or Explanation of Significant Differences (ESD). The Amended ROD or ESD, to be completed in 2001, will include a summary of public comments with EPA's responses. The remedy for NIBW may differ from the preferred alternative in this plan as a result of public comments.

EPA encourages the public to review the FSA and other reports in the Administrative Record in order to gain a more comprehensive understanding of NIBW and then comment on any of the alternatives presented in this

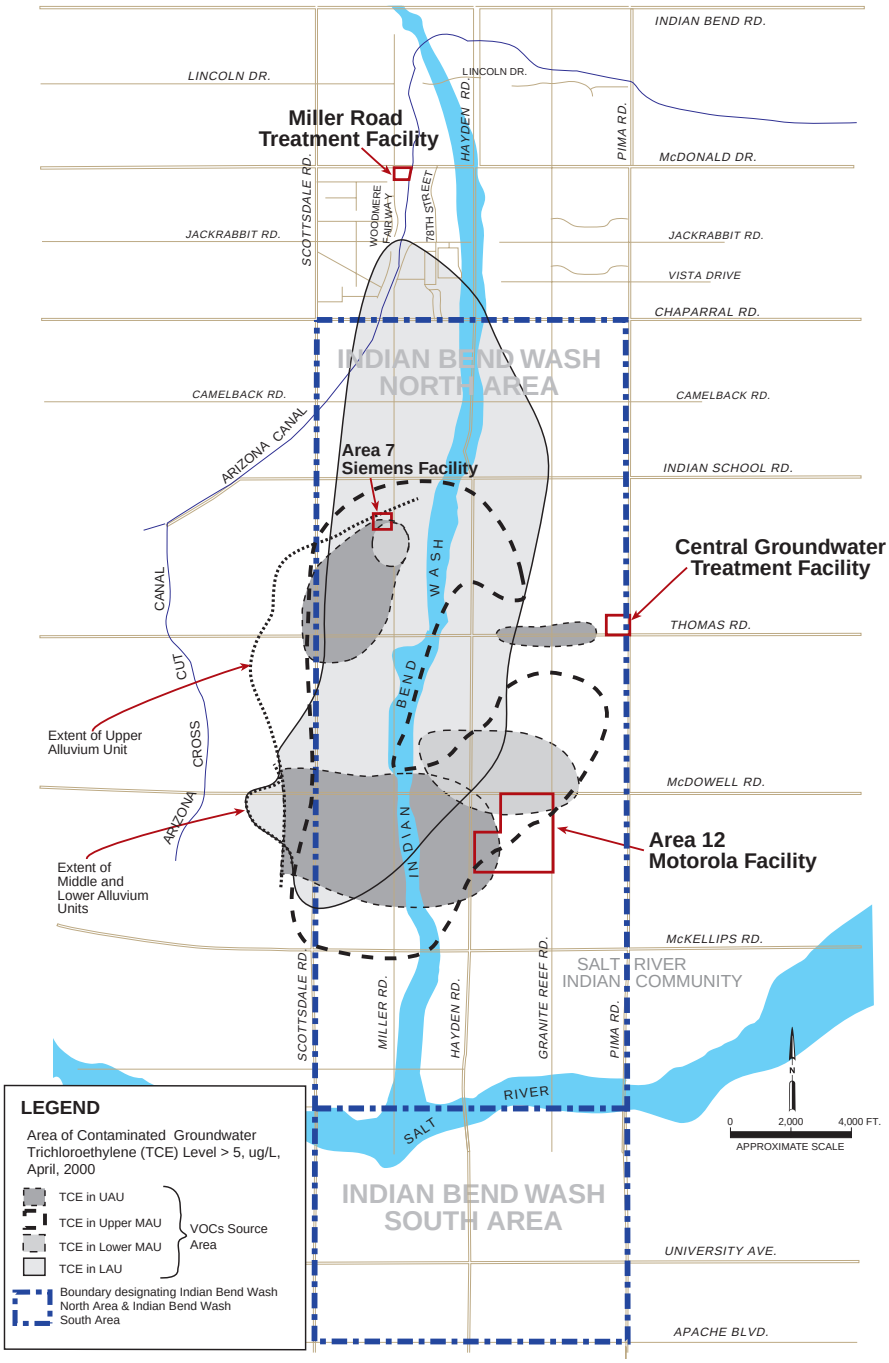


Figure 1: North Indian Bend Wash Superfund Site

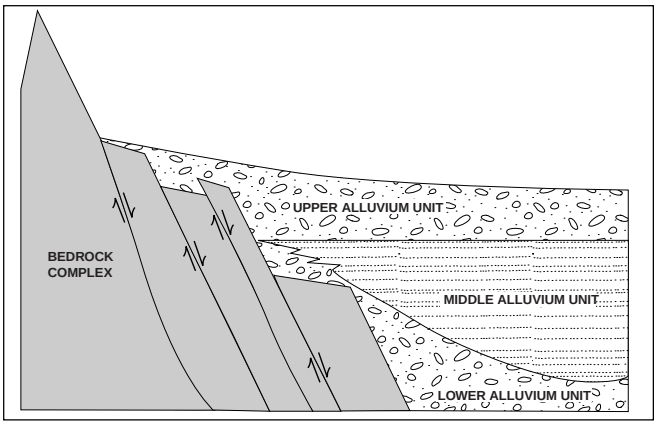


Figure 2: Hydrogeologic Section

Proposed Plan. The Administrative Record is located at the Scottsdale Civic Center Library at 3839 N. Drinkwater Blvd., Scottsdale, Arizona and the EPA Region 9 office in San Francisco.

Cleanup Actions Previously Selected for NIBW

NIBW was investigated in two phases referred to as Operable Units. For the most part, the groundwater contamination at NIBW is considered the first Operable Unit (OU I). OU I is also referred to as the Scottsdale Groundwater Operable Unit. OU II includes groundwater in the shallow aquifer and soil contamination at the source areas.

The Remedial Investigation (RI) for OU I began in July 1984 and was completed in August 1986. This RI focused on characterizing the groundwater conditions as well as determining the extent of groundwater contamination. The Feasibility Study (FS) for OU I was completed in April 1988 and addressed only the Middle and Lower Aquifers at NIBW. In September 1988 EPA, in consultation with ADEQ, issued a ROD for the Scottsdale Groundwater Operable Unit. In 1991, EPA completed negotiations for a Consent Decree with PRPs for implementation of the cleanup actions selected in the 1988 ROD. The main goal of this ROD and Consent Decree was to make sure the groundwater contamination plume was not migrating beyond the site boundaries. This strategy is known as *containment* or *capture* of a groundwater plume.

The RI and the FS for the second Operable unit, or OU II, were completed in April 1991 as a single document. The OU II RI/FS focused on the groundwater contamination in the Upper Aquifer and soil contamination at certain industrial facilities at NIBW. In total, 14 facilities or distinct areas were investigated. These areas are

numbered 1 through 12 (see Figure 3, this page). Area 5 consists of three different parts: 5A, 5B and 5C. EPA issued the OU II ROD in September 1991. In August 1993, EPA completed negotiations for a second Consent Decree with the PRPs for implementing the cleanup actions selected in the 1991 ROD. The main goal of the OU II ROD and Consent Decree was to address soil contamination at specific facilities and monitor the groundwater in the Upper Aquifer. Alternative 1 of this Proposed Plan includes all requirements of both the 1988 and the 1991 RODs (see description of Alternative 1 on Page 7). The remedy selected in the upcoming Amended ROD will not change the remedy that was selected for the OU II ROD.

At this time, most of the work required by both the first and second Consent Decrees has been completed. Following construction and initial operation of the September 1988 remedy it became apparent that the groundwater contamination in the Middle and Lower Aquifers had not been contained or captured. As a result, additional voluntary actions were taken by the PRPs. These additional voluntary actions have become known as the "Remedy Enhancements" (see description of Alternative 2 on Page 7 for a summary of the Remedy Enhancements).

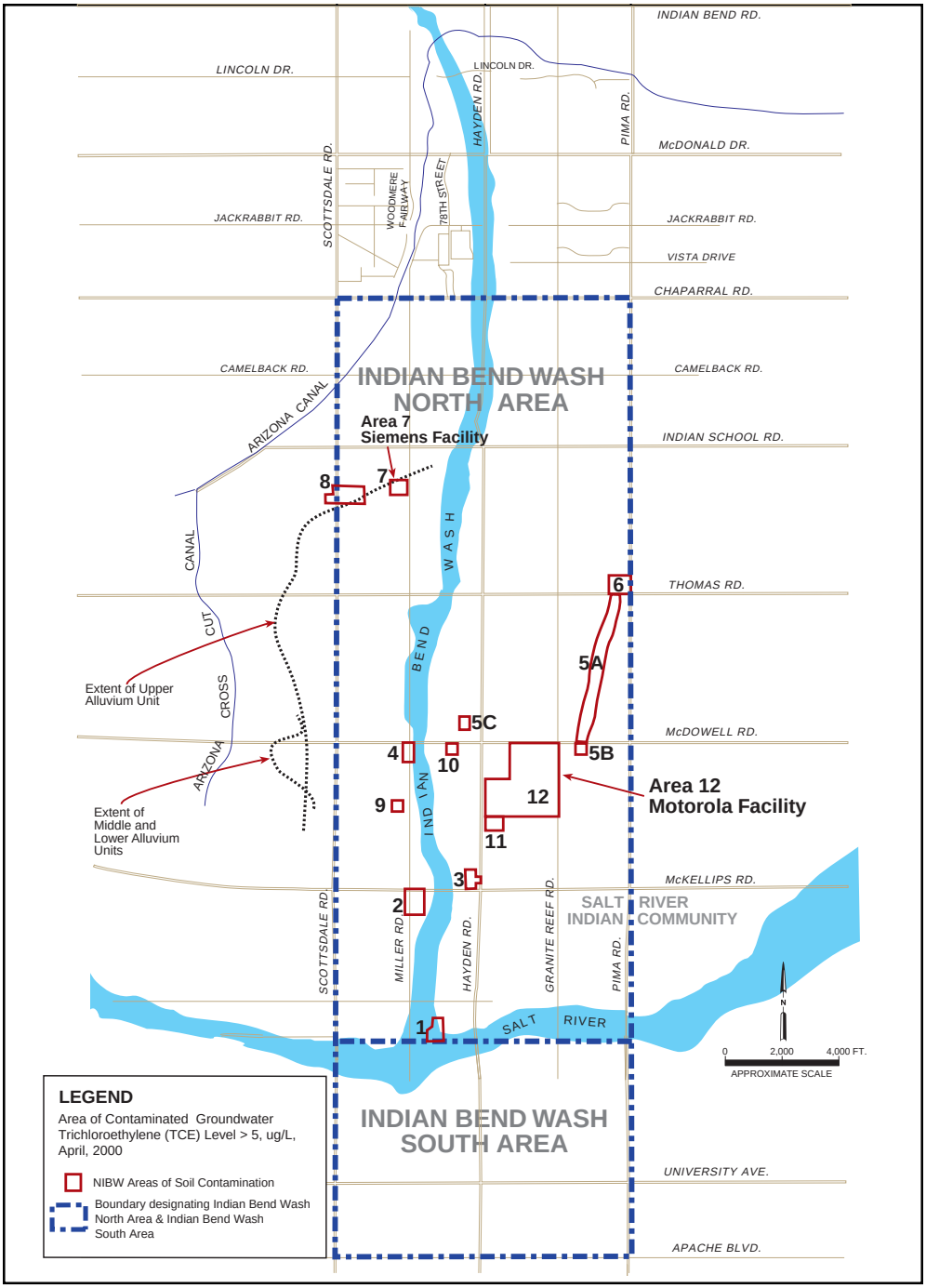


Figure 3: NIBW Areas of Soil Contamination

Site Characteristics

As already stated, the contaminants of concern found in soil and groundwater at NIBW are volatile organic compounds (VOCs). Trichloroethylene (TCE) is the primary VOC of concern, although tetrachloroethylene (PCE), 1,1-dichloroethene (1,1-DCE), trichloroethane (TCA), and chloroform (CFM) have also been detected at lower concentrations. Only TCE and PCE are present in groundwater at levels above the federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCL). MCLs are EPA's standards for drinking water quality.

Soil contaminated with VOCs was detected in the immediate vicinity of most of the 14 facilities investigated during the OU II RI/FS. Although EPA determined that exposure to the contaminated soils was not a problem, it was decided that soil contaminants at some of the facilities could further contaminate the underlying groundwater. Therefore, EPA required soil cleanup at the facilities that were posing a threat to the groundwater. This soil cleanup work is expected to be complete in 2001.

Subsidence

Land subsidence can occur when too much groundwater is pumped from an aquifer and the water level, or water table, declines. When the water table declines, the water in the spaces between the gravel and sand particles is removed and the particles settle and compact due to pressure from the land above. This could potentially result in sinking of the ground surface which may affect structures, roads, etc.

EPA recognizes that the community has concerns with the potential for land subsidence. The FSA provides detailed information about subsidence in the NIBW area. As early as the 1970s, it was known that groundwater pumping was leading to severe depletion of available aquifer supplies in many areas of Arizona. As a result, groundwater levels were declining. These declines were, in part, caused by agricultural irrigation. The most immediate and obvious effect of declining groundwater levels on groundwater users was significantly decreased yield from wells and increased costs of pumping. As more time has passed, groundwater declines have led to other serious problems including land subsidence. In the last four decades, an increasing portion of the groundwater withdrawn in the NIBW area has been withdrawn by municipal water providers. A number of major municipal and irrigation water providers operate in the NIBW area, including the City of Scottsdale, Salt River Project, City of Tempe, Arcadia Water Company, Arizona American Water Company, and Salt River Pima-Maricopa Indian Community.

Land subsidence is not an imminent threat at NIBW, but rather a condition developed from historical pumping of the groundwater that should be closely monitored and carefully considered in the planning of future water resource use. The Arizona Department of Water Resources (ADWR) has committed to a regional program of subsidence monitoring that was initiated in 1999. The ADWR study will develop the necessary baseline data in the NIBW area to verify and quantify any future land subsidence. Because restoration of NIBW groundwater is anticipated to require decades to accomplish, potential long-term impacts to the aquifer have been evaluated as part of our cleanup analyses.

Groundwater plumes contaminated with VOCs have been identified in all three aquifers present at NIBW (Upper, Middle and Lower). The Upper Aquifer is located at approximately 70 to 110 feet below ground surface (bgs), the Middle Aquifer is located at approximately 100 to 170 feet bgs, and the Lower Aquifer is located at approximately 310 to 700 feet bgs. As shown in Figure 1, the groundwater contamination currently extends from McKellips Road to the south, Jackrabbit Road to the north, and Pima Road to the east. The western edge of the plume is just beyond Scottsdale Road in the southern portion of the plume but does not cross Scottsdale Road in the northern portion of the plume.

The groundwater plumes are defined by TCE levels equal to or greater than the MCL. The MCL for TCE is 5 micrograms per liter (ug/l). Therefore, the plumes at NIBW are defined as areas of TCE concentrations greater than 5 ug/l.

The horizontal extent of contamination in the Upper Aquifer has changed very little over the years. However, the concentration of contaminants, specifically TCE, has changed a great deal. The highest level of TCE observed in the Upper Aquifer was 16,000 ug/l in 1993. In April 1998, the highest concentration of TCE was 200 ug/l. The latest groundwater data, collected in October 2000, indicates that the highest concentration of TCE in the Upper Aquifer is currently 70 ug/l.

The horizontal extent of contamination in the Middle Aquifer has also remained relatively constant in most areas of the aquifer while contaminant concentrations have declined. The highest level of TCE observed in the Middle Aquifer was 7,000 ug/l in 1991. The latest groundwater data (October 2000) indicates that the highest concentration of TCE in the Middle Aquifer is currently 3,900 ug/l.

The concentrations of TCE have generally increased in the northern portion of the Lower Aquifer. In the past, the contamination plume in the lower aquifer has migrated to the north. Further migration does not appear to be presently occurring. The concentrations of TCE in the southern portion of the Lower Aquifer have shown a slight decrease over time. The highest level of TCE observed in the Lower Aquifer was 310 ug/l in 1991. The latest groundwater data (October 2000) indicates that the highest concentration of TCE in the Lower Aquifer is currently 280 ug/l.

The data trends showing the groundwater plumes diminishing in size and decreasing contaminant concentrations can be contributed to the cleanup work that has either been completed or is in progress at NIBW. The ROD Amendment or ESD that will follow this Proposed Plan will finalize the groundwater cleanup remedy and ensure that the VOC concentrations in the groundwater are reduced to acceptable water quality standards.

It is important to note that groundwater extraction and treatment systems at Areas 7 and 12 have been installed over the past year as part of the voluntary

actions discussed above. Neither of these systems has yet developed sufficient operational data to indicate whether additional wells or increased pumpage will be required to contain these source areas. The alternatives evaluated in the FSA assume that capture of the Area 7 and Area 12 plumes will be maintained. However, significant uncertainty exists as to whether this will occur. As a result, it is important that the preferred remedy pay particular attention to the effectiveness of the groundwater cleanup in Area 7 and Area 12.

Summary of Site Risks

To help determine whether we need to take action to protect human health at a site, EPA typically considers the health risks to people who might be exposed to the chemicals at the site. When assessing human health risks, EPA considers two types of risks: cancer risk and non-cancer risk. The contaminants at NIBW have the potential to cause cancer.

Cancer risk is the excess lifetime chance of getting cancer due to a chemical exposure. For example, a one-in-a-million risk is the equivalent of one case of cancer more than would normally occur in a hypothetical population of a million people. Normally, people have a one-in-three chance of getting cancer over a lifetime which translates to 333,333 people expected to get cancer in a population of one million. So, if a site posed a one-in-a-million excess lifetime cancer risk, that would add one extra cancer case to the background rate of cancer (add 1 to 333,333 and you get 333,334 cancers per million people) if, in fact, a million people were exposed over a lifetime. If less than one million people were exposed, then we would not expect any additional cancers to result from a one-in-a-million risk. EPA manages risk at a site so that the risk falls within a "risk management range" of one in ten thousand to one in a million. Risk greater than one in ten thousand generally requires action at a site to reduce the risk.

The potential for actual human exposure to the contaminants at NIBW occurred before the Scottsdale drinking water wells were found to be contaminated in 1981. Since those drinking water supply wells were taken out of service, there has been no long-term human exposure to the contamination in the groundwater.

EPA's risk assessment policy requires evaluation of the potential risks associated with individuals drinking water from the contaminated aquifer for an extended period of time. Based on the risk assessment at NIBW, it was determined that continued remediation of the groundwater is necessary to ensure that no one will be exposed to the contamination in the future.

Risk assessments were performed for both OU I and OU II. The risk assessment conducted for OU I concluded that the highest potential cancer risk would have been approximately 4 X 10^{-5} if water from contaminated supply wells within NIBW was served to individuals without treatment. This means that if 100,000 people had drunk untreated water for an extended period of time (*e.g.*, 70 years), according to the scenario identified in the risk assessment, four additional people would have been expected to develop cancer. The cleanup of groundwater at this Site is intended to address this potential risk.

The risk assessment for OU II concluded that the greatest risk associated with contaminated soil was impact to groundwater. The other risk assessed was direct contact to contaminated soil which was found to pose a minimal risk. Thus, soil cleanup actions were taken at specific areas because it was determined that VOCs in the soil, if left unaddressed, would contribute to the groundwater contamination. At this time, the soil cleanup is nearly complete, eliminating the possibility of exposure to workers or residents as well as eliminating the impact to groundwater.

It is EPA's current judgement that the preferred alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect

Use of Groundwater in the NIBW Area

Because the plume of groundwater at NIBW exists beneath numerous private properties, there are concerns regarding the private use of groundwater in the area. First, there is the possibility that a citizen could unknowingly drill a well into the plume and drink contaminated water. Second, there is the possibility that a large volume production well could be installed in the area that could upset groundwater movement and, therefore, compromise the effectiveness of the remedy. EPA is aware of this situation and has considered these scenarios. It is important to know that all wells drilled in the state of Arizona must be permitted by ADWR. Licensed drillers in the state will not drill a well without such a permit. Because all individuals who apply for drilling permits within or near the NIBW site are informed in writing by ADWR that the groundwater is contaminated, this should deter individuals from installing and using domestic drinking water wells. Arizona's Well Spacing and Impact Rules regulate the placement of new and replacement production wells in areas such as NIBW. New production wells must be located in such a manner that nearby wells of record, such as the wells used for cleanup activities at NIBW, are not adversely affected.

public health or the environment from actual or threatened releases of hazardous substances into the environment.

Remedial Action Objectives

EPA's objectives for the actions considered in this Proposed Plan are to:

1. Remove VOCs from groundwater until drinking water standards for VOCs are met;
2. Protect human health and the environment by eliminating exposure to contaminated groundwater;
3. Achieve containment of the groundwater contamination plume by eliminating future migration of contaminants toward other drinking water supply wells;
4. Provide a potable water source for the City of Scottsdale;
5. Eliminate ongoing sources of contamination in soil to ensure that groundwater is not further degraded; and
6. Provide long-term management of contaminated ground water to improve the regional aquifer's suitability for potable use.

Summary of Remedial Alternatives

This Proposed Plan evaluates eight alternatives which are described below. All of the alternatives include the cleanup measures identified as the Required Remedy in the FSA. Alternative 1 is the remedy required in the OU I ROD and is referred to in this Proposed Plan as "The Required Remedy." Alternative 1 is considered the No Action alternative since it does not include any of the enhancements or upgrades evaluated in the FSA. Alternative 1 was implemented in accordance with the first Consent Decree. The Enhanced Remedy is Alternative 2, which represents Alternative 1 with the voluntary additions to the system which were completed in 2000. Alternatives 3, 3A, 4, 5 and 6 all start with the Enhanced Remedy and include various additional actions.

Cleanup Alternatives

Alternative 1: No Action. EPA always compares a no-action alternative to any active cleanup technology under consideration. As mentioned above, the No Action Alternative is also referred to as the Required Remedy.

The following work has been completed:

- Installation of a groundwater monitoring well network followed by expansion of the network focusing on conditions in the Upper Aquifer;
- Construction of a groundwater treatment plant, which is referred to as the Central Groundwater Treatment Facility located on Pima Road in Scottsdale;
- Implementation of soil cleanup actions at Areas 8 and 12 using Soil Vapor Extraction; and
- Additional soil investigations at Areas 5A, 5B, 5C, 6, 9, 11, and 12.

The following work continues to occur as required by the first and second Consent Decrees:

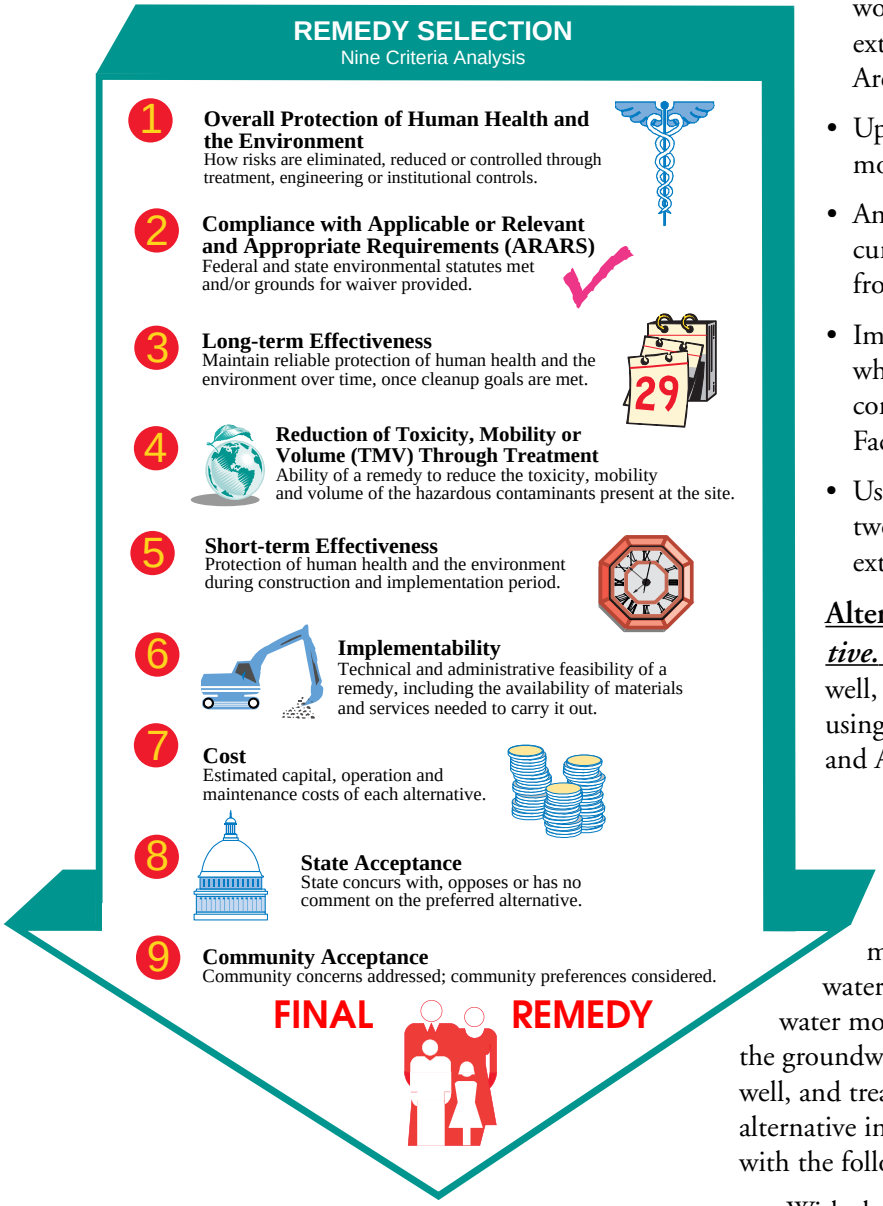
- Periodic evaluation of groundwater conditions;
- Extraction of groundwater from the Middle and Lower Aquifers to contain the groundwater contamination plume;
- Operation of the Central Groundwater Treatment Facility to treat the groundwater extracted from the central part of NIBW; and
- Implementation of a soil cleanup action at Area 7 using Soil Vapor Extraction.

Alternative 1 fails to meet EPA's threshold criteria for remedy selection because it failed to contain the contaminated groundwater plume and is therefore not protective. As a result, Alternative 1 is not evaluated further.

Alternative 2: Enhanced Remedy. This alternative includes several improvements that have been made to the Required Remedy over the last several years. These improvements were necessary because the Required Remedy did not contain the groundwater contamination plume and the contamination continued to spread north threatening the water supply of the City of Paradise Valley.

The following work has been completed:

- Installation of new monitoring wells;
- Installation of two new extraction wells to improve capture in the Lower Aquifer;
- Connection of an additional extraction well to the Central Groundwater Treatment Facility;
- Construction of the Miller Road Treatment Facility to treat water extracted from the wells in the northern part of NIBW to protect the water supply of Paradise Valley;
- Implementation of a soil cleanup action at Area 6 using Soil Vapor Extraction;
- Groundwater extraction and treatment systems for the Middle Aquifer constructed at Areas 7 and 12; and
- Modifications to improve treatment efficiency at the Central Groundwater Treatment Facility.



The following work currently continues to occur as voluntary actions:

- Operation of the Miller Road Treatment Facility to treat the groundwater extracted from the northern part of NIBW;
- Operation of the Area 7 and Area 12 groundwater treatment systems; and
- Increased frequency of groundwater sampling events and monitoring of the groundwater in all three aquifers (Upper, Middle and Lower).

Alternative 3: The Enhanced Remedy plus one new extraction well. This alternative includes all of the actions identified for Alternative 2 plus the following additional actions:

- Installation of one extraction well and one recharge well in the vicinity of Area 7. The extraction well would be installed into the Middle Aquifer and the extracted water would be treated at the existing Area 7 groundwater treatment plant;
- Upgrades to the Area 7 treatment plant to accommodate increased production;
- An increased minimum pumping rate from the current rate of 6,300 gpm to 6,600 gpm annually from wells located in the central part of NIBW;
- Implementation of a priority pumping scheme which includes increased pumping from the most contaminated Central Groundwater Treatment Facility extraction wells; and
- Use of spare pumps to avoid long downtimes for two Central Groundwater Treatment Facility extraction wells.

Alternative 3A: ***This is EPA's preferred alternative.*** The Enhanced Remedy plus one new extraction well, continued evaluation of groundwater conditions using the model and contingency actions for Area 7 and Area 12 groundwater plumes. **This is a variation of Alternative 3 described in the FSA. For clarification purposes, this alternative will be referred to as Alternative 3A.**

Alternative 3A requires groundwater containment in the Middle and Lower Aquifers, groundwater extraction at Areas 7 and 12, continued groundwater monitoring in all three aquifers, periodic updates to the groundwater model, installation of one new extraction well, and treatment of all extracted groundwater. This alternative includes all actions identified for Alternative 3 with the following exceptions and additional actions:

- With the exception of continued use of the Miller Road Treatment Plant, the voluntary actions identified under Alternative 2 will become required actions under Alternative 3A;
- The goal for minimum total annual average pumping rate will remain at 6,300 gallons per minute for wells located in the central part of NIBW;
- Groundwater extraction from wells PVWC-14, PVWC-15 and PCX-1 (or wells that are equivalent in location, depth, design, capacity etc.) in the northern part of NIBW to ensure capture of the groundwater contamination plume;
- Maintenance of a minimum total annual average pump ing rate of 5,480 gpm for wells PVWC-14, PVWC-15 and PCX-1 (or wells that are equivalent in location, depth, design, capacity etc.);

- Treatment of all extracted groundwater using air stripping;
- Treated water shall not contain VOCs above EPA's Maximum Contaminant Levels (MCLs) based on any single sampling event;
- Periodic updating of the groundwater model to ensure that the extraction and treatment part of the cleanup strategy is working as predicted;
- Localized containment of the groundwater plumes specific to Area 7 and Area 12; and
- If groundwater data indicates that the Area 7 and Area 12 groundwater plumes are migrating toward the southwest margin, contingency actions (potentially including additional wells or increased pumpage in these areas) shall be evaluated and implemented.

Modeling results for Alternative 3A are expected to be comparable to the modeling results for Alternative 3. It is assumed that extraction wells PVWC-14, PVWC-15 and PCX-1 and the Miller Road Treatment Facility will be utilized for this remedy, however their use is not required. If extraction wells PVWC-14, PVWC-15 and PCX-1 and the Miller Road Treatment Facility are utilized, the cost estimate for Alternative 3A is expected to be comparable to the estimate for Alternative 3.

It should be noted that the remedy selected in the amended ROD or ESD will be required to meet the Remedial Action Objectives (See Page 7). Except for Alternative 1, the alternatives evaluated in the FSA and this Proposed Plan all meet the threshold criteria, and any of the alternatives or any combination of components could have been included in the Preferred Alternative. Once the selected remedy is implemented, if it is determined that any of the Remedial Action Objectives are not being met, additional actions could be deemed necessary without a subsequent decision document. It is often necessary during the design and implementation of remedial actions to alter components within the system in order to achieve optimal performance.

Table 1: Comparison of Alternatives

Criteria	1	2	3	3A (preferred)	4	5	5RR	6
Protectiveness	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compliance with ARARs	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Long-term effectiveness	Not Effective	Effective & Permanent	Effective & Permanent	Effective & Permanent	Effective & Permanent	Effective & Permanent	Effective & Permanent	Effective & Permanent
Reduction in toxicity, mobility, or volume	May not reduce	Would take the longest	3rd fastest	3rd fastest	3rd fastest	2nd fastest	2nd fastest	Would happen first
Short-term effectiveness	Not effective	May not be effective	Effective	Effective	Effective	Effective	Effective	Effective
Implement-ability	Already Implemented	Already Implemented	Easiest	Easiest	2nd easiest	3rd most difficult	2nd most difficult	Most difficult
Cost to implement	$31,756,952	$61,250,820	$62,738,710	$62,738,710	$64,356,695	$65,304,605	$ 77,958,160	$100,842,869
State acceptance	No	No	Yes	Yes	Yes	Yes	No	No
Public acceptance	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Alternative 4: The Enhanced Remedy plus one new Middle Aquifer extraction well and one new Lower Aquifer extraction well. This alternative includes all actions identified for Alternative 2 plus installation of two new extraction wells and a recharge well. One of these wells will be installed in the vicinity of Area 7, and the extracted water from this well will be treated at the Area 7 groundwater treatment plant. The new recharge well will also be installed in the vicinity of Area 7. The other new well will be installed in the central part of the Lower Aquifer contamination plume, and the extracted water from this well will be treated at the Central Groundwater Treatment Facility.

Area 7, and the extracted water from this well would be treated at the Area 7 groundwater treatment plant. The new recharge well will be installed in the vicinity of Area 7. One of the extraction wells would be installed in the Middle Aquifer in the vicinity of Area 12, and the extracted water from this well would be treated at the Area 12 groundwater treatment plant. The other three new extraction wells would be installed in the central part of the Lower Aquifer contamination plume, and the extracted water from one of these wells would be treated at the Central Groundwater Treatment Facility. Water from the other two wells would be treated at alternate locations.

TABLE 2: COST COMPARISONS

	FSA cost estimate:	Cost incurred to date capital + O&M:	50 years present worth cost	Cost to implement and/or operate	Difference between cost to implement & cost of existing remedies
Alternative 1	$69,928,000.	$37,802,010.	$69,558,942.	$31,756,952.*	$0.
Alternative 2	$128,196,600.	$64,610,400.	$125,861,220.	$61,250,820.*	$0.
Alternative 3/3A	$132,775,800.	$65,953,700.	$128,692,410.	$62,738,710.	$4,174,490.
Alternative 4	$134,215,000.	$65,953,700.	$130,310,395.	$ 64,356,695.	$4,449,175.
Alternative 5	$135,217,000.	$65,953,700.	$131,258,305.	$ 65,304,605.	$6,740,385.
Alternative 5RR	$146,700,000.	$65,953,700.	$143,911,860.	$ 77,958,160.	$19,393,940.
Alternative 6	$171,100,000.	$65,953,700.	$166,796,569.	$100,842,869.	$42,278,649.

* These costs figures represent just operations costs - all construction costs have been incurred.

Alternative 5: The Enhanced Remedy plus one new Middle Aquifer extraction well and variable frequency drives. This alternative includes all actions identified for Alternative 2 in addition to the following: Installation of an extraction well and a new recharge well in the vicinity of Area 7; use of variable frequency drives to change extraction rates in response to water system demand; and use of large capacity pumps.

Alternative 5RR: Alternative 5 with reinjection/recharge. This alternative includes all actions identified for Alternative 5 plus an evaluation of the possible effects of reinjection/ recharge of the Central Groundwater Treatment Facility treated water. This alternative evaluated reinjecting groundwater into both the Upper and Lower Aquifers for control of the plume.

Alternative 6: The Enhanced Remedy plus three new Middle Aquifer extraction wells and three new Lower Aquifer extraction wells and a recharge well. This alternative includes all actions identified for Alternative 2 plus installation of six new extraction wells. Two of these wells would be installed in the Middle Aquifer in the vicinity of

Evaluation of Alternatives

To select the preferred alternative EPA evaluated the possible cleanup alternatives against the nine criteria designed to measure the effectiveness and acceptability of each alternative (see "Remedy Selection" for definitions of the criteria).

Table 1, Page 9 summarizes EPA's evaluation of the alternatives against the nine criteria. As a result of this evaluation, EPA currently prefers Alternative 3A.

The cost estimates in Table 1 are not the estimates identified in the FSA. As described previously in this Proposed Plan, both Alternatives 1 and 2 have been constructed, and operations and maintenance (O&M) costs have been incurred for several years. No additional capital costs will be associated with Alternatives 1 and 2. In the FSA, the costs were estimated for each alternative based on the sum of the amount of money spent to date plus the amount of money to be spent in the future. In order to clarify the comparison of costs, Table 2 breaks the cost estimates down into the following: (1) the cost estimate in the FSA; (2) all costs incurred to date - which includes capital and O&M costs; (3) 50 years present worth

cost; (4) cost to implement and/or operate the remedy starting now; and (5) the difference between the cost to implement/operate the remedies evaluated in the FSA minus the cost to implement/operate currently existing remedies.

As indicated above, the cost of implementing Alternative 3A is anticipated to be the same as the cost of implementing Alternative 3.

Based upon information currently available, EPA believes Alternative 3A meets the threshold criteria and provides the best balance among the alternatives. EPA expects the preferred alternative to satisfy the following statutory requirements of CERCLA Section 121(b):

(1) to be protective of human health and the environment;

(2) to comply with ARARs;

(3) to be cost effective;

(4) to utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and

(5) to satisfy the preference for treatment as a principal element.

The preferred alternative can change in response to public comment and new information.

INFORMATION REPOSITORY

The administrative record is compiled of all documents upon which EPA makes decisions about site cleanup. The Administrative Record and other information on the North Indian Bend Wash Superfund site is located at:

Scottsdale Civic Center Library (S.W. Room)
3839 N. Drinkwater Blvd.
Scottsdale, Arizona
(480) 312-2320
Hours: Mon - Thurs, 9 a.m. to 9 p.m.
Fri & Sat, 10 a.m. to 6 p.m.
Sunday, 1 p.m. to 5 p.m.

HOW TO COMMENT ON THE CLEANUP ALTERNATIVES

EPA places a high value on public input. We encourage community members to comment on EPA's Preferred Alternative as well as the other cleanup options included in this Proposed Plan. You may do that in person at the public meeting on May 9 (see details, front page) or in writing to EPA during the comment period. At the public meeting, a court reporter will be present to accurately document comments which may be given orally or in writing. If you prefer to write or e-mail your comments to us, please have them postmarked or e-mailed no later than June 28, 2001. Written comments should be sent to: Melissa Pennington, Remedial Project Manager, U.S. EPA, 75 Hawthorne St., (SFD-8-2), San Francisco, CA 94105. E-mail: pennington.melissa@epa.gov

COMMUNITY MEETING MAY 9, 2001
COMMENT PERIOD APRIL 30 - JUNE 28, 2001
FOR INDIAN BEND WASH NORTH STUDY AREA

FOR MORE INFORMATION

If you have questions or concerns regarding the North Indian Bend Wash Superfund site, please contact one of the EPA staff below:

Melissa Pennington
Remedial Project Manager (SFD-8-2)
(415) 744-1141

Vicki Rosen
Community Involvement Coordinator (SFD-3)
(415) 744-2187

U.S. Environmental Protection Agency
75 Hawthorne St.
San Francisco, CA 94105

Your may reach either Melissa or Vicki
toll-free at 1 (800) 231-3075.
Please leave a message and your call will be returned.

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