

## **Record of Decision**

### **Proposed Leasing of Lands at Fort Bliss, Texas for the Proposed Siting, Construction, and Operation by the City of El Paso of a Brackish Water Desalination Plant and Support Facilities**

This Record of Decision (ROD) has been prepared pursuant to Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508) and Army Regulation 200-2, Environmental Analysis of Army Actions (32 CFR Part 651). It documents the Department of the Army's decision concerning proposed Federal actions analyzed in the *Final Environmental Impact Statement (EIS) for Proposed Leasing of Lands at Fort Bliss, Texas for the Proposed Siting, Construction, and Operation by the City of El Paso of a Brackish Water Desalination Plant and Support Facilities* (December 2004). The Environmental Protection Agency published its notice of filing of the Final EIS in the *Federal Register* on February 4, 2005.

#### **Introduction**

On September 12, 2003, the Department of the Army published a Notice of Intent to prepare an environmental impact statement to address a proposal by the City of El Paso, El Paso Water Utilities (EPWU), to obtain a lease or easement for land on Fort Bliss for construction and operation of a desalination plant and associated facilities. The proposed plant would be built to treat brackish water from underground aquifer sources to provide potable water for the City of El Paso and Fort Bliss.

Both Fort Bliss and the City of El Paso have separately contemplated constructing desalination facilities. The Army considered EPWU's proposal because it believes that building a single desalination plant to provide potable water for both the installation and the city would be more efficient and cost effective than building separate desalination plants.

The Army prepared and distributed a Draft EIS, dated July 2004, for public review and comment. The NOA for the Draft EIS was published in the *Federal Register* on August 13, 2004, initiating a 45-day comment period, which ended on September 27, 2004. The comments received during that period were included in the Final EIS.

#### **Purpose of and Need for Action**

The purpose of the proposed action is to treat brackish groundwater drawn from the Hueco Bolson Aquifer underlying Fort Bliss and the City of El Paso to provide an additional freshwater supply for both Army and City use. The Hueco Bolson contains both potable fresh groundwater and nonpotable brackish groundwater. Potable groundwater drawn from the aquifer through wells currently supplies Fort Bliss; EPWU; Ciudad Juarez, Mexico; and small communities in Texas and New Mexico. While the City of El Paso also obtains water from other sources, including surface water from the Rio Grande, most of the potable water used by Fort Bliss is supplied by wells that pump groundwater from the Hueco Bolson.

Withdrawals of fresh groundwater from the Hueco Bolson currently exceed the aquifer's recharge rate. Pumping of fresh groundwater by EPWU, the Army, Ciudad Juarez, and

others has resulted in declining groundwater levels in the bolson. Brackish groundwater is intruding into the aquifer's freshwater area and has the potential to affect existing water wells on Fort Bliss and in other areas of El Paso.

Both Fort Bliss and El Paso need reliable sources of potable water. A large volume of brackish groundwater exists adjacent to the freshwater zone of the Hueco Bolson. Desalination of the brackish groundwater offers a way to extend the life of the aquifer as a source of potable water. The proposed desalination plant would reduce withdrawals of fresh groundwater from the bolson, extending the useful life of the aquifer and intercepting the flow of brackish groundwater toward existing wells.

### **Description of Proposed Action**

The proposed action consists of constructing and operating the following facilities:

Desalination Plant Complex. This complex would be built on a 31-acre site and include a desalination process building, administration building, Learning Center, parking lot, and several small support buildings with electrical transformers, pumping equipment, and chemical storage. Brackish groundwater drawn from existing EPWU wells on the east side of El Paso International Airport (EPIA) would be transported through underground pipes to the desalination process building and treated using a process called reverse osmosis. The plant is being designed to treat 18.5 million gallons per day (MGD) of brackish feed water. The reverse osmosis process would produce approximately 15.5 MGD of fresh water and 3 MGD of a residual brine called concentrate, which requires disposal.

Concentrate Disposal Site. The residual salts and other minerals removed from the brackish water would be in a concentrated liquid form. Two methods were considered for disposing of this concentrate. One involves reinjecting it deep underground into a confined formation where it would be isolated from any drinking water sources. The other method considered draining the concentrate into evaporation ponds, where the liquid would be allowed to evaporate, leaving a solid residue that would be disposed of in a landfill.

Blend Wells. Sixteen new wells constructed on Fort Bliss land adjacent to Loop 375 in El Paso would be used to pump groundwater from the Hueco Bolson to add to the treated water at the desalination plant. These wells would produce approximately 12 MGD of water, which when blended with the 15.5 MGD produced by the plant, would yield a total of 27.5 MGD of potable water for use by EPWU and Fort Bliss.

Pipelines. Underground pipelines would be constructed to convey water pumped from the existing EPWU feed wells on EPIA and the new blend wells to the desalination plant. Additional underground pipelines would be constructed to transport the treated and blended water from the plant to the EPWU distribution system. A third pipeline would be constructed to transport the concentrate to the disposal site.

After construction, the desalination plant and supporting facilities would be operated and maintained by EPWU.

## **Alternatives Considered**

The EIS examines seven alternatives in detail, six action alternatives and the No Action Alternative. The six action alternatives are comprised of combinations of three alternative sites for the desalination plant complex (Sites 1, 2, and 3) and two concentrate disposal alternatives. Each alternative is described below.

Alternative 1. This alternative involves developing the desalination plant complex at Site 1 in the southwest corner of the South Training Areas of Fort Bliss, northeast of EPIA, east of Biggs Army Air Field, and near Loop 375. The site is undeveloped and lies in an area that is free of known cultural resources. The soil in the area is sandy, and the prevailing vegetation cover is mesquite coppice dunes and sandscrub, the most widespread vegetation type on Fort Bliss. There are no known sensitive plants on the site, and loss of wildlife habitat from construction at the site would not be significant given the widespread distribution of mesquite coppice dunes and sandscrub on Fort Bliss and regionally. Among the three alternative desalination plant sites, Site 1 is the farthest from residential areas and transportation, water, and sewer connections.

Under this alternative, the concentrate would be disposed of through deep-well injection using 3 to 5 injection wells located in the northeast corner of Fort Bliss' South Training Areas, near the Texas-New Mexico border. The dominant vegetation types at this location are mesquite coppice dunes and sandscrub, and creosote bush and tarbrush shrublands; both vegetation types are widespread on Fort Bliss. The surrounding land is undeveloped and used for military training. The concentrate would be injected into a Fusselman limestone formation between 2,000 and 2,900 feet below ground surface. Tests are ongoing to verify that the formation is adequately isolated from drinking water sources and able to accommodate the projected volume of concentrate, criteria for obtaining a permit from the Texas Commission on Environmental Quality (TCEQ). The concentrate would be conveyed to the injection wells through underground pipelines constructed across the South Training Areas of Fort Bliss.

A total area of approximately 227 acres would be disturbed during construction of this alternative.

Alternative 2. This alternative involves developing the desalination plant complex on Site 2, which is in the South Training Areas of Fort Bliss east of EPIA and approximately one mile south of Site 1. Site 2 is undeveloped and lies in an area free of known cultural resources. The soils, vegetation, and landscape at this site are similar to Site 1. Under this alternative, the concentrate would be disposed of through deep-well injection in the same location as Alternative 1. A total of approximately 234 acres would be disturbed during construction of this alternative.

Alternative 3. This alternative involves developing the desalination plant complex on Site 3, which is in the South Training Areas east of EPIA, approximately 2,000 feet north of Montana Avenue. The site is undeveloped and lies in an area that is free of known cultural resources. The soils, vegetation, and landscape are similar to Sites 1 and 2. Site 3 is closest to residential areas and utility connections. Under this alternative, the concentrate would be disposed of through deep-well injection in the same location as Alternative 1. A total of approximately 227 acres would be disturbed during construction of this alternative.

The Army has a slight preference for this alternative over the others because the facilities would be located at the farthest edges of the training areas of Fort Bliss and therefore would have the least impact on the Army's training mission. Although this alternative, along with Alternatives 1 and 2, involves construction of a concentrate pipeline across the full width of the South Training Areas, most of the pipeline would be located within existing utility easements and constructed to withstand the weight of large Army training equipment, so the impact on training is considered manageable.

Alternative 4. The desalination plant complex in this alternative would be located at the same site as Alternative 1 (Site 1). This alternative would differ from Alternative 1 in the method and location for the disposal of the concentrate.

Under this alternative, the concentrate would be transported through underground pipes to evaporation ponds that would be constructed in the South Training Areas of Fort Bliss, adjacent to EPWU's existing Fred Hervey Water Reclamation Plant and approximately three-quarters of a mile east of U.S. Highway 54. The concentrate would be conveyed to the evaporation ponds from the desalination plant through underground pipelines. A total of 12 lined ponds would be constructed covering approximately 680 acres. The concentrate would be pumped into four large holding ponds and from there into eight smaller management ponds where it would evaporate to dryness. The solid residue would be trucked to a local landfill for disposal. The evaporation ponds would require a permit from TCEQ.

A total of approximately 945 acres would be disturbed during construction of this alternative, the majority for the evaporation ponds. For this reason, although they would confine project elements to the west side of the South Training Areas, alternatives involving the evaporation ponds are not preferred by the Army because they would take more land out of use for military training.

Alternative 5. The desalination plant complex in this alternative would be located at the same site as Alternative 2 (Site 2). The concentrate would be disposed of in the same manner and location as Alternative 4. A total of approximately 944 acres would be disturbed during construction of this alternative

Alternative 6. The desalination plant complex in this alternative would be located at the same site as Alternative 3 (Site 3). The concentrate would be disposed of in the same manner and location as Alternative 4. A total of approximately 937 acres would be disturbed during construction of this alternative.

Environmentally Preferred Alternative. All seven alternatives were found to have some environmental effects. Impacts from construction and operation of the desalination plant complex, blend wells, and pipelines would be similar among all six action alternatives. Alternatives 1, 2, and 3 would have similar impacts from disposal of the concentrate through deep-well injection. There remain some uncertainties about technical aspects of deep-well injection, but studies conducted to date are promising, and TCEQ permitting requirements will ensure that this disposal method provides adequate protection for other water sources. Alternatives 4, 5, and 6 would have similar impacts from disposal of the concentrate in evaporation ponds. Because of the large area involved, the potential for affecting archaeological resources is somewhat greater, and there is some risk to migratory birds associated with this disposal method.

The No Action Alternative would avoid the effects associated with constructing and operating the desalination facilities, but it would also forego the benefits that the action alternatives provide by prolonging the useful life of the fresh water in the Hueco Bolson Aquifer and intercepting and slowing down the intrusion of brackish water into freshwater wells on Fort Bliss. Thus, identifying the environmentally preferred alternative is not an easy matter in this situation. Considering the full extent of the potential consequences, the No Action Alternative would have marginally less impact on the environment in the short term, although whether it is also the environmentally preferred alternative over the long term would depend on what other measures are ultimately used to compensate for the loss of the freshwater source in the Hueco Bolson.

### **Decision**


The Army has decided to grant an easement to EPWU to implement Alternative 3. In reaching this decision, the Army considered its own needs for a reliable source of potable water, compatibility with its training mission, and the environmental consequences associated with each alternative. The Army decided not to select the No Action Alternative because it fails to address the issues of declining freshwater supplies and impending brackish groundwater intrusion on Fort Bliss wells. Among the action alternatives, the Army selected deep-well injection as the preferred concentrate disposal method because it is the preferred method of EPWU and, with the protection provided by the TCEQ permitting process, appears to have less potential for adverse environmental impacts than the evaporation ponds. The three desalination plant sites do not differ materially in their compatibility with the Army's mission or their environmental effects; therefore, the Army selected Site 3 because it is EPWU's preferred site due to its proximity to roads and utilities, as well as to EPWU's water distribution system.

### **Mitigation Measures**

All practicable means of avoiding or minimizing environmental harm have been adopted, first in identifying the alternatives given detailed consideration, and second through mitigation measures. The three alternative desalination plant sites were selected for consideration because they do not contain sensitive cultural or biological resources, and a desalination plant would be compatible with near-by land uses. Mitigation measures to be implemented by EPWU to further reduce the potential for adverse environmental impact include the following:

1. Using dust suppression measures during ground disturbance to prevent erosion and wind-blown dust.
2. Installing pressure monitors in the concentrate pipeline to detect leaks or catastrophic failures and developing an emergency action plan to minimize the release of concentrate during an accident or equipment failure.
3. Designing the access road to the desalination plant site to minimize impact to traffic flow on Montana Avenue.
4. Establishing a procedure for EPWU to coordinate access to the injection wells and concentrate pipelines with Fort Bliss to ensure required maintenance can be performed with minimal interference with the Army's mission at Fort Bliss.

All these mitigation requirements will be included as conditions of the easement to be granted by the Army to EPWU.



Hugh M. Exton, Jr.

Director

SWRO, Installation Management Agency

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**DEPARTMENT OF DEFENSE**

**Department of the Army**

**Record of Decision for the Proposed Leasing of Lands at Fort Bliss, Texas for the Proposed Siting, Construction, and Operation by the City of El Paso of a Brackish Water Desalination Plant and Support Facilities**

**AGENCY:** Department of the Army, DoD.

**ACTION:** Notice.

**SUMMARY:** The Department of the Army announces the execution of a Record of Decision (ROD) to grant an easement to the City of El Paso, El Paso Water Utilities (EPWU), for land in the South Training Areas of Fort Bliss for construction and operation of a desalination plant and support facilities, including wells, pipelines, and disposal sites for the residual brine, referred to as concentrate, resulting from the desalination process. The ROD was signed on March 7, 2005, pursuant to the completion of a Final Environmental Impact Statement (FEIS) dated December 2004.

**ADDRESSES:** To obtain copies of the ROD, contact John F. Barrera (915) 568-3908 or write to: Fort Bliss Directorate of the Environment, ATTN: IMSW-BLS-Z, Building 624, Pleasanton Road, Fort Bliss, TX 79916-6812.

**FOR FURTHER INFORMATION CONTACT:** John F. Barrera, (915) 568-3908.

**SUPPLEMENTARY INFORMATION:** The desalination plant is needed to provide an additional reliable source of potable water for the City of El Paso and Fort Bliss.

Currently, both EPWU and Fort Bliss pump fresh groundwater from the Hueco Bolson Aquifer. Ongoing withdrawals of fresh groundwater from the bolson exceed the aquifer's recharge rate. Pumping of fresh groundwater by EPWU, the Army, Ciudad Juarez, and others has resulted in declining groundwater levels in the bolson. Brackish groundwater

is intruding into the aquifer's freshwater area and has the potential to affect existing water wells on Fort Bliss and in other areas of El Paso. The desalination plant will treat brackish (salty) water from the Hueco Bolson Aquifer to provide potable water for use by the City and Fort Bliss.

The FEIS addressed the potential environmental effects of the proposed project and analyzed seven alternatives in detail; six action alternatives and the No Action Alternative. The six action alternatives comprised alternative combinations of three candidate sites for the desalination plant itself – Sites 1, 2, and 3 – and two alternatives for disposing of the concentrate, deep-well injection and evaporation ponds. The Army has decided to grant an easement to EPWU to implement Alternative 3, consisting of desalination plant Site 3, an undeveloped site near Montana Avenue east of El Paso International Airport, and disposal of the concentrate through deep-well injection at a location in the northeast corner of the South Training Areas of Fort Bliss near the Texas-New Mexico border.

In reaching this decision, the Army considered its own needs for a reliable source of potable water, compatibility with its training mission, and the environmental consequences associated with each alternative. The Army decided not to select the No Action Alternative because it fails to address the issues of declining freshwater supplies and impending brackish groundwater intrusion on Fort Bliss wells. Among the action alternatives, the Army selected deep-well injection as the preferred concentrate disposal method because it is the preferred method of EPWU and, with the protection provided by the Texas Commission on Environmental Quality permitting process, appears to have less potential for adverse environmental impacts than the evaporation ponds. The three desalination plant sites do not differ materially in their compatibility with the Army's mission or their environmental effects; therefore, the Army selected Site 3 because it is EPWU's preferred site due to its proximity to roads and utilities, as well as to EPWU's water distribution system.

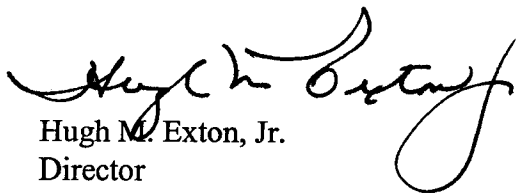
All practicable means of avoiding or minimizing environmental harm have been adopted through site selection and mitigation measures. The desalination plant site does



not contain sensitive cultural or biological resources, and a desalination plant is compatible with near-by land uses. Mitigation measures to be implemented by EPWU to further reduce the potential for adverse environmental impact include the following:

1. Using dust suppression measures during ground disturbance to prevent erosion and wind-blown dust.
2. Installing pressure monitors in the concentrate pipeline to detect leaks or catastrophic failures and developing an emergency action plan to minimize the release of concentrate during an accident or equipment failure.
3. Designing the access road to the desalination plant site to minimize impact to traffic flow on Montana Avenue.
4. Establishing a procedure for EPWU to coordinate access to the injection wells and concentrate pipelines with Fort Bliss to ensure required maintenance can be performed with minimal interference with the Army's mission at Fort Bliss.

These mitigation measures will be included as conditions of the easement to be granted by the Army to EPWU.



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