Proposed Plan
Donna Reservoir and Canal System Superfund Site
Donna, Hidalgo County, Texas
May 2018

The Purpose of this Proposed Plan is to:

- Identify the United States Environmental Protection Agency's Preferred Alternative to address the contamination at the Donna Reservoir and Canal System Superfund Site, and the reasons for the selection;
- Provide general background information and the results of the Remedial Investigation, Feasibility Study, and Human Health and Ecological Risk Assessments;
- Describe the other remedial alternatives evaluated in the Feasibility Study;
- Solicit public review and comment on all of the remedial alternatives and information contained in the Administrative Record file; and
- Provide information on how the public can be involved in the remedy selection process.

INTRODUCTION

This Proposed Plan describes the United States Environmental Protection Agency's (EPA, Region 6) summary of the risks associated with the release of hazardous substances (i.e., Polychlorinated Biphenyls) at the Donna Reservoir and Canal System Superfund Site (Site) and the Preferred Alternative to address the contamination at the Site. The Site is located in a predominantly agricultural area located south of the City of Donna, in Hidalgo County, Texas (Figure 1 – Site Location). The Site includes a system of freshwater earthen and concrete-lined canals, reservoirs, and a concrete pipeline (i.e., Inverted Siphon [Siphon]) that transports water underneath the Arroyo Colorado River. The Site includes the "Donna Main Canal" which originates at the Rio Grande River. This river forms the international border between the United States and Mexico. The Site is described in detail in the "Site Location and Background" section of this Proposed Plan.

The EPA's Preferred Alternative for the Site is Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals), which addresses the contaminated fish and sediment, and the Siphon, and will cost an estimated $19,400,000 to implement. The EPA intends to implement an "iterative/flexible approach" to address the contamination at the Site. This approach is described in the "Summary of Remedial Alternatives" and "Summary of the EPA's Preferred Alternative 6" sections of this Proposed Plan. Summaries of all of the remedial alternatives considered by the EPA to address the contaminated sediment and fish at the Site are also provided in this Proposed Plan. Based on the currently available information and data, the EPA's Preferred Alternative 6, identified in this Proposed Plan, is necessary to protect public health and the environment from actual or threatened releases of hazardous substances into the environment. The EPA has conducted its activities in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund, 42 U.S.C.

§§ 9601 et seq.) and the National Oil and Hazardous Substance Contingency Plan (NCP, 40 CFR Part 300).

The EPA is issuing this Proposed Plan to solicit the public's review and comment on the EPA's Preferred Alternative 6 and all other remedial alternatives which address the contamination at the Site. This Proposed Plan is being issued in accordance with and as a part of the EPA's public participation responsibilities under CERCLA Section 117(a), 42 U.S.C. § 9617(a), and 40 CFR §300.430(f)(2). The recommendations and alternatives set forth in this Proposed Plan are based on the information and documents contained in the "Administrative Record" file for the Site. The EPA will select a final remedy, in the Record of Decision, after the public comment period has ended and all of the comments have been reviewed and carefully considered by the EPA. The EPA assesses public comments on the Proposed Plan to gauge community acceptance and will respond to each public comment received in the "Responsiveness Summary" of the Record of Decision. The Record of Decision describes the final cleanup decision for the Site.

The 30-day public comment period for this Proposed Plan begins on May 7, 2018, and ends on June 5, 2018. Public comments should be provided to the EPA's Remedial Project Manager identified in the "Community Participation" and "Request for Comments" sections of this Proposed Plan. The EPA may select a modified version of the Preferred Alternative, or another alternative, based on new information or public comments.

The EPA is the lead agency and conducted the Remedial Investigation and Feasibility Study (RI/FS) for the Site. The RI/FS determined the nature and extent of contamination, risks to human health and the environment, and the various remedial alternatives considered by the EPA to address the contamination at the Site. The Texas Commission on Environmental Quality (TCEQ) is the support agency for the RI/FS.

COMMUNITY PARTICIPATION

This Proposed Plan summarizes and describes the information and documents contained in the Administrative Record file for the Site. The Administrative Record includes the RI and FS Reports, Human Health Risk Assessment and Ecological Risk Assessment Reports, and all other documents and reports used by the EPA in the selection of the Preferred Alternative presented in this Proposed Plan. The executive summaries of several documents have been translated into Spanish as requested by the public.

The EPA encourages the public to review these documents to obtain more information about the Superfund activities that have been conducted at the Site. The EPA also encourages the public to participate in the public comment process for the cleanup of the Site.

The Administrative Record file, which contains all of the information and documents used in the EPA's selection of the Preferred Alternative presented in this Proposed Plan, is available at the following information repository locations:

Donna Public Library
301 S. Main
Donna, Texas 78537
956-464-2221

Opened Monday through Friday: 8:00 am to 7:45 pm
Closed Saturday and Sunday

Texas Commission on Environmental Quality
Building E, Records Management, First Floor
12100 Park 35 Circle
Austin, Texas 78753
512-239-2920
Opened Monday through Friday: 8:00 am to 5:00 pm

U.S. Environmental Protection Agency (Region 6)
1445 Ross Avenue, 7th Floor
Dallas, Texas 75202-2733
Edward Mekeel
214-665-2252 or 800-533-3508 (toll free)
e-mail: mekeel.edward@epa.gov
Opened Monday through Friday (Except Federal Holidays): 8:00 am to 4:30 pm

The Administrative Record file, along with the Site's profile page, is also available on the internet at the following EPA's website:

http://epa.gov/superfund/donna-reservoir-canal

The EPA and the TCEQ will hold two public meetings to inform all interested parties of the EPA's Preferred Alternative and to obtain comments on the Proposed Plan. The public meetings will be held:

Tuesday, May 22, 2018
10:00 am to 12:00 pm
Alamo Community Resource Center
1429 S. Tower Road
Alamo, Texas 78516

Tuesday, May 22, 2018
6:00 pm to 8:00 pm
Donna City Hall
307 S. 12th St.
Donna, Texas 78537
956-464-3314

These public meetings will include simultaneous translation, from English to Spanish, and a court reporter who will transcribe and provide a transcript of the entire meeting. These meetings will be held in fully accessible facilities. Should you have questions about a facility's compliance with the "Americans with Disabilities Act" please contact:

Edward Mekeel
Community Involvement Coordinator
214-665-2252 or 800-533-3508 (toll free)
e-mail: mekeel.edward@epa.gov

Oral or written public comments can be presented at the public meetings or can be submitted during the public comment period which starts on May 7, 2018, and ends on June 5, 2018. Any comments not provided to the EPA during the public meetings should be postmarked/dated no later than the last day of the public comment period and, in order to be considered, should be mailed by postal mail or electronic mail to the EPA's Remedial Project Manager:

Rafael Casanova, P.G.
Remedial Project Manager (Environmental Scientist)
Bilingual: English/Spanish
United States Environmental Protection Agency (Region 6)
Superfund Division (6SF-RA)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733
214-665-7437 or 800-533-3508 (toll free)
e-mail: casanova.rafael@epa.gov

For specific information about the TCEQ's role in the Superfund process please contact:

Anna Lund
Project Manager
Texas Commission on Environmental Quality
Remediation Division (MC-136)
P.O. Box 13087
Austin, Texas 78711-3807
210-403-4020
e-mail: anna.lund@tceq.texas.gov

SITE LOCATION AND BACKGROUND

The Site is located in South Texas, south of the City of Donna, near the United States border with Mexico (Figure 1 – Site Location). The City of Alamo is located northwest of the Site. The Site includes the approximately 400-acre Donna Reservoir (also known as "Donna Lake," "Val Verde Lake," "Laguna Val Verde," and "Laguna El Gato"), a system of lateral lined and unlined canals and piping, and the Siphon. The Site extends north from the Rio Grande River approximately 17 miles with lateral canals that extend approximately 5.6 miles to the east and west. The canals, reservoir system, and the Siphon are owned and operated by the Donna Irrigation District Hidalgo County Number One (Irrigation District), which provides drinking water to the City of Donna, drinking water to the North Alamo Water Supply Corporation Plant, and also provides irrigation water for the surrounding predominantly agricultural land. The Irrigation District may also own several portions of the properties underlying the reservoir and canal system. According to a report by the Texas Natural Resource and Conservation Commission (TNRCC), now the TCEQ, the remaining water that enters the reservoir and canal system and is not diverted for drinking water or irrigation purposes flows north of the Site into the Donna Drain and then east into the North Floodway (Figure 1 – Site Location). Additionally, according to the Irrigation District, this remaining water may also flow into the Engleman Irrigation District.

Surface water is pumped into the Site, by the Irrigation District, from the Rio Grande River through five pipes at a point approximately one mile downstream from Reynosa, Tamaulipas, Mexico. The volume and velocity of the water entering the canal system and thus the reservoir can be controlled by the number of operational pumps. The water enters the canal and travels north by gravity flow for approximately two miles in an unlined earthen canal until it reaches the Siphon. The Siphon which was constructed underground/underneath the Arroyo Colorado River, for a distance of 1,600 feet (ft), is a 9-foot inner diameter concrete pipeline. After passing through the Siphon water flow continues in an unlined earthen canal before it reaches a concrete-lined channel that conveys water north an additional 1.75 miles to the reservoirs.

Donna Lake consists of a system of reservoirs that have an average depth of five feet and store up to 390 million gallons of water. The reservoir system is made up of the East, West, and Northwest segments (Figure 2 – Site Layout). A lined canal flows directly into the West Reservoir where water flows freely into the East Reservoir through two conduits beneath South Valley View Road. This road divides the West and East Reservoir segments. According to the Irrigation District, the Northwest Reservoir is currently used for overflow from the East and West Reservoirs through a culvert.

SITE HISTORY

Construction of the Site began in 1906 with the installation of the "Rio Grande River Pump Station." This pump station was soon expanded to include a set of five diesel pump engines that lift water through pipes from the Rio Grande River into the Main Canal. The Northwest Reservoir was placed into service in 1913 with the construction of "Re-lift Pumping Plant No. 3" on the northern side of the reservoir. The Siphon at the Arroyo Colorado River was constructed underneath the arroyo approximately in 1926 and replaced the original elevated concrete canal that stretched above the arroyo on concrete pillars. The West Reservoir of the Donna Reservoir system was placed into service in 1954 or 1955.

The Irrigation District performs periodic maintenance of the canals (i.e., dredging/excavation of sediment) as the need arises. The Irrigation District performed maintenance in 1990 and 1991 on the Lower West Main Canal Unlined from the Siphon's outlet to the Lower West Main Canal Lined. Other maintenance operations may have occurred as needed during the operation of the reservoir and canal system. According to the Irrigation District maintenance of the reservoirs may also be needed in the future.

SITE CONTAMINATION

The Site includes the Siphon and a system of reservoirs and canals containing sediment and fish with elevated concentrations of polychlorinated biphenyls (PCBs). PCBs are a group of man-made organic chemicals. A PCB Congener is any single unique chemical compound in the PCB category. There are a total of 209 PCB Congeners. "Aroclor" is a trade name for a specific group of PCBs (e.g., Aroclor-1254) and each Aroclor is a mixture of several PCB Congeners. PCBs as Aroclors and PCB Congeners were investigated at the Site. Elevated levels of PCBs are found in the sediment immediately downstream of the Siphon's exit and in fish collected from all reaches of the system investigated. PCB Congeners were detected in all surface water samples collected; however, PCB Aroclors were only detected in one surface water sample which was collected near the Siphon's exit.

FEDERAL AND STATE INVESTIGATIONS

A series of investigations and sampling events were performed by several federal and state agencies throughout the history of the Site. The historical dataset is summarized in the "Conceptual Understanding of the Site Technical Memorandum (Revision 02)," which is available for review in the Administrative Record file for the Site.

Routine Monitoring

Environmental monitoring included the collection of water, sediment, and fish samples in the Lower Rio Grande Valley by various agencies beginning in the 1970s. A significant portion of the monitoring was performed by the TNRCC. The waterways and fish of the Lower Rio Grande Valley were monitored as part of the TNRCC's surface water quality monitoring program from 1975 to 1995. During routine sampling, the TNRCC found PCBs in 4 of 44 fish samples at concentrations ranging from 0.07 to 0.20 parts per million (ppm) and in 18 of 152 sediment samples at concentrations ranging from 0.02 to 0.40 ppm. PCBs were not detected among the 124 water samples.

Sampling during an "Edible Fish Tissue Sampling Program" performed between 1980 and 1986 by the Texas Department of Health (predecessor of the Texas Department of State Health Services) collected 71 fish samples from the waters of the Lower Rio Grande Valley and only three PCB detections (0.49, 0.05, and 0.04 ppm) were confirmed.

Investigatory Sampling

The Donna Irrigation District reservoir and canal system became an area of interest during the Lower Rio Grande Valley Environmental Study (LRGVES) of 1992. The "Interagency Coordinating Committee for United States/Mexico Border Environmental Health" initiated the LRGVES in response to the elevated rate of infants born with neural tube defects in Cameron County in 1991.

The LRGVES included a contaminant exposure study of nine families residing in Cameron and Hidalgo Counties. The study of one of the families revealed that the concentration of PCBs in a common carp intended for human consumption was 399 ppm. This carp was reportedly caught in one of the main Donna Irrigation District canals. Blood samples from the residents in possession of the fish also had elevated concentrations of PCBs.

The Texas Department of Health and the TNRCC conducted extensive sampling throughout Hidalgo County and along the Rio Grande River from El Paso to Brownsville following the results of the LRGVES. Elevated concentrations of PCBs in fish fillets collected from the Donna Main Canal, Reservoirs, and the Arroyo Colorado were found, while fish from other waters studied did not reveal elevated concentrations.

Texas Department of Health

The Texas Department of Health (TDH) issued "Aquatic Life Order Number 9" on February 4, 1994. This order stated that ". . . the Donna Irrigation System located in Hidalgo County is declared a prohibited area for the taking of all species of aquatic life." According to a sign posted by the TDH at Donna Lake there is a $500 fine for the possession of fish from the Site. This sign

also states that "Warning, it is illegal to possess fish from this water, fish caught from this water may contain harmful chemicals." The enforcement authority for this order is the Texas Parks and Wildlife Department (TPWD).

Texas Natural Resource Conservation Commission Screening Site Inspection Report

The TNRCC's Superfund Site Discovery and Assessment Program, in coordination with the EPA (Region 6), prepared a Screening Site Inspection (SSI) Report for the Site in November 2001. Analytical results from the SSI sampling events conducted on April 9 through April 13, 2001, revealed elevated concentrations of PCB Aroclor-1254 in suspended sediment samples. Concentrations ranged from 15.0 to 53.0 micrograms per kilogram (µg/kg) in suspended sediment over an approximate 5.75-mile distance within the Site. PCBs were not detected in soil, surface water, or bed sediment samples collected during the SSI. The SSI Report concluded that concentrations of the hazardous substance PCB Aroclor-1254 met the observed release criteria and the source was listed as suspended sediment.

U.S. Geological Survey Suspended Sediment Evaluation

The U.S. Geological Survey conducted suspended sediment sampling events in the canal system between 1999 and 2001. The results of this investigation revealed PCB-contaminated sediment and identified a 35-meter-long PCB concentration area of the canal system just north of the Siphon's exit in the Lower West Main Canal Unlined, on the right bank, as a possible source area.

Texas Department of State Health Services Sampling and Visits to Restaurants

The results of the 2005 fish tissue sampling by the Texas Department of State Health Services (TDSHS) indicated PCBs were present in most of the 30 fish collected from the Main Canal, Lower West Main Canal Unlined, Lower West Main Canal Lined, and Donna Reservoir at concentrations ranging from below detection limits (< 0.005 µg/kg) to 2,706 µg/kg. The TDSHS concluded their 2005 report by stating that ". . . consumption of any of the . . . fish species from the DIS [Donna Irrigation System] . . . continues to pose an apparent hazard to human health."

The EPA received information in March 2013 that a vendor was possibly selling fish from Donna Lake to local restaurants. The EPA provided this information to the TDSHS and, based on this information, the "Health Assessment and Toxicology Program" of the TDSHS visited approximately 60 restaurants in the Donna and Alamo, Texas, areas in June 3 through 5, 2013. The TDSHS informed the restaurant owners and managers of the fish contamination at the Site and stated that it is illegal to possess fish from the Site and to purchase and serve those fish. The TDSHS also distributed educational materials to the restaurants and the Hidalgo County Health Department during the June 2013 visits.

Agency for Toxic Substances and Disease Registry Public Health Assessment

The Agency for Toxic Substances and Disease Registry (ATSDR) released the Public Health Assessment (PHA) for the Site for public comment in January 2009. The final version was released in November 2010 by the TDSHS in conjunction with the ATSDR. The final report concluded that the consumption of fish from the Site was harmful to human health due to the PCB concentrations found in the fish. The final report also concluded that the concentrations of

metals, volatile organic compounds, semivolatile organic compounds, or organochlorine pesticides detected in fish from the Site are not expected to pose harm to human health.

Texas Commission on Environmental Quality Feasibility Study

A 2006 Feasibility Study (FS) conducted by the TCEQ focused only on the area previously identified as contaminated with PCBs in the Lower West Main Canal Unlined from the Siphon's exit to the 90-degree bend in the unlined canal. This study by the TCEQ evaluated two alternatives: 1) Alternative 1 – Lining of Siphon and Canal, and 2) Alternative 2 – Construction of New Siphon and Canal.

Alternative 1 (Lining of Siphon and Canal) involved lining the main canal and the Siphon with a suitable material which would prevent the bed sediment or other potential sources in the canal from contacting the conveyed waters. This alternative included sliplining of the existing Siphon.

Alternative 2 (Construction of New Siphon and Canal) involved the construction of a siphon and canal from the entrance of the existing Siphon to the 90-degree bend in the Main Canal. This alternative would require the purchase of a strip of land along the existing canal, if not already available, and depending on the chosen alignment of the new siphon and canal. The new canal would be lined since the source area of the PCBs was unknown at that time of the 2006 study. Since the TCEQ was not able to identify a source of PCB contamination, they referred the Site to the EPA for further investigation.

National Priorities List

The Site was listed on the National Priorities List in March 2008 due to PCB contamination in sediment and fish.

SUPERFUND REMOVAL AND REMEDIAL ACTIONS

EPA's Fish Removal Actions

The EPA conducted fish removal actions in August 2008, February 2009, August 2009, October 2012, and June 2017. In accordance with CERCLA Section 104(a), 42 U.S.C. § 9604(a), and 40 CFR 300.415 of the NCP, these removal actions were conducted to address actual or threatened releases of hazardous substances, pollutants, or contaminants from this Site that may present an imminent and substantial endangerment to the public health, welfare, or the environment.

These fish removal actions involved the removal of several species of fish from the Site (i.e., alligator gar, freshwater drum, common carp, small mouth buffalo, channel catfish, large/small mouth bass, white bass, blue tilapia, shad, and eel, including other species of fish). The purpose of the fish removal actions was to remove fish, from the reservoir and canal system, possibly contaminated with PCBs and which were available for human consumption. The EPA implemented these removal actions along with a public awareness campaign using newspaper and television media to warn against consumption of PCB-contaminated fish that may be harmful to human health.

These fish removal actions, coordinated with the U.S. Fish and Wildlife Service, utilized electroshocking methods. An electrical current was introduced into the water column which

resulted in stunning or disorienting the fish. During the time when the fish were disoriented they were netted by boat personnel. Approximately 42,553 fish were removed from the Site during the five fish removal actions and disposed of at an appropriate landfill. Selected whole fish and fillet samples were analyzed in a laboratory for PCBs.

EPA's Phased Remedial Investigation

The EPA began the Remedial Investigation (RI) in September 2012 and ended the field work in April 2015 by completing thirteen phases of field work. The purpose of the Remedial Investigation/Feasibility Study (RI/FS) was to determine the nature and extent of contamination at the Site, develop the Human Health and Ecological Risk Assessments, and evaluate the applicable remedial alternatives to address the contamination at the Site.

More than 80,000 analyses were conducted for more than 480 analytes on samples collected during the RI. Samples were analyzed for a combination of the following: PCBs as Aroclors, PCB Congeners, pesticides, volatile organic compounds, semi-volatile organic compounds, total target analyte list (TAL) metals, dissolved TAL metals, total organic carbon, total dissolved solids, total suspended solids, lipids, and percent moisture. The specific media investigated during the RI included soil, bed/suspended sediment, surface water, ground water, whole fish, fish fillets, mollusk tissue, and concrete debris and asphalt (both found in the Lower West Main Canal Unlined segment of the canal system near the Siphon's exit).

The EPA notified local public officials of the planned RI and fish removal action activities prior to each mobilization to the field. The EPA also notified the print and television media and conducted interviews in English and Spanish to inform the public of the EPA's activities at the Site and to warn against consumption of contaminated fish.

Remedial Investigation Phases One through Thirteen

Phase One RI field activities were conducted from September 17 through 28, 2012, and included the collection of sediment, surface water, suspended sediment, soil, and air samples from several areas of the Site, including the Rio Grande River. Sediment and water samples were also collected from the City of Donna Drinking Water Treatment Plant as requested by city officials during a community meeting.

Phase Two field activities were conducted from October 15 through 25, 2012. This phase of the RI included the fourth fish removal action, fish sample collection, and the performance of a land-based geophysical survey. The purpose of the survey was to detect the presence of metallic objects (i.e., buried drums or transformers) possibly containing PCBs. During the course of the investigation several local residents informed the EPA of their observation of the presence of metallic receptacles at the Site. This survey covered approximately 33 acres of land areas adjacent to the banks of the Site's canals and the Arroyo Colorado River.

Phase Three field activities were conducted from December 10 through 15, 2012, and included a water-based geophysical survey among other sample collection efforts. This survey was also designed to locate metallic objects and covered approximately 18 acres submerged under water in the Site's canals.

Phases Four through Thirteen began on February 18, 2013, and ended on April 10, 2015, respectively. Among other sample collection efforts, the EPA's "Environmental Response

Team/Scientific Engineering and Response and Analytical Services Contract Dive Team" used side-scan sonar to scan the Lower West Main Canal Unlined and East Reservoir to locate underwater objects. Selected objects were then physically examined by members of the EPA's Region 6 Dive Team. Discrete surface water samples were collected at the Siphon's entrance; the interior of the Siphon at approximately 150, 350, 550, 750, 950, 1150, 1350, and 1550 feet from the Siphon's entrance; and at the Siphon's exit (Figure 3 – Total Polychlorinated Biphenyl Congeners in Surface Water Samples Collected from Inside the Siphon). An inspection of the interior of the Siphon was performed using a Remotely Operated Vehicle (ROV). The ROV which was outfitted with scanning sonar, multi-beam imaging sonar, and a video camera was used to inspect the entire length of the interior of the Siphon.

Summary of the Remedial Investigation and Likely Source of Contamination

The likely source of PCB contamination at the Site has been determined to be the Siphon, based on an evaluation of the data collected during the RI and by deduction and weight of evidence. PCBs as Aroclors and all PCB Congeners were investigated at the Site.

Sediment with the highest concentrations of PCBs at the Site is located in the Lower West Main Canal Unlined which is located hydraulically downgradient of the Siphon's exit (Figure 4 – Sediment Remediation Area). The highest observed concentration of Total PCB Aroclors in sediment is 11 mg/kg which was reported entirely as Aroclor-1254. The highest observed concentration of Total PCB Congeners in sediment is 6.1 mg/kg. Sediment concentrations of PCBs as Aroclors and Total PCB Congeners decrease with distance in the Lower West Main Canal Unlined from the Siphon's exit to results reported below detection levels hydraulically downstream of the exit.

Fish with detectable levels of Aroclor-1254 or Aroclor-1260 have been collected from all segments of the canal and reservoir system sampled (i.e., Main Canal, Lower West Main Canal, and West Reservoir). The maximum detected concentration of Total PCB Aroclors in fish tissue is 8.1 mg/kg found in a sample of smallmouth buffalo, a bottom feeder, from the Lower West Main Canal Unlined near the Siphon's exit. The maximum detected concentration of Total PCB Congeners in fish tissue is 150 mg/kg also found in a smallmouth buffalo caught in the Lower West Main Canal Unlined in a downgradient portion of the canal and the Siphon's exit.

Maximum detected PCB Congener concentrations observed in fish are approximately 25 times higher than those observed in sediment (150 mg/kg in fish to 6.1 mg/kg in sediment). Maximum detected PCB Aroclor concentrations observed in fish are very similar to those observed in sediment (8.1 mg/kg in fish to 11 mg/kg in sediment). Average detected PCB Congener concentrations observed in fish are approximately 20 times higher than those observed in average detected sediment concentrations (7.2 mg/kg in fish to 0.41 mg/kg in sediment). Average detected PCB Aroclor concentrations observed in fish are approximately 3 times higher than those observed in average detected sediment concentrations (0.6 mg/kg in fish to 0.24 mg/kg in sediment). These data support the conclusion that PCBs are bioaccumulating in fish.

Passive sampler data, from semi-permeable membrane devices and polyoxymethylene (POM) samplers, indicate that fish may receive PCBs from the water column directly or from prey or sediment they ingest. However, the largest known PCB source at the Site directly accessible to fish is sediment in the canal system. POM sampler concentrations of Total PCB Congeners in both surface water and sediment pore water generally decrease with distance from the Siphon's exit also indicating that the PCBs are likely sourced from the Siphon.

Discrete surface water samples collected from the entrance, at multiple points from the interior, and at the exit of the Siphon indicate a general increase in concentrations of Total PCB Congeners along the interior length of the Siphon (Figure 3 – Total Polychlorinated Biphenyl Congeners in Surface Water Samples Collected from Inside the Siphon). The increase in Total PCB Congeners surface water concentrations along the length of the Siphon suggests that the likely source is not a single point but is present along the entire length of the Siphon. PCBs enter the canal system by leaching into surface water during flow through the Siphon. PCBs are hydrophobic and adhere to particles in the surface water and sediment. The rapid decrease in surface water velocity as water exits the Siphon results in deposition of particulates that have adsorbed PCBs which resulted in a gradient of decreasing PCB sediment concentrations with distance from the Siphon's exit. Fish and other aquatic organisms have bioaccumulated and biomagnified PCBs through the food chain over a period of decades.

The water-based geophysical survey and side-scan sonar results provided targets for further investigation by the EPA's scientific divers in the Lower West Main Canal Unlined. The scientific divers found no indication of PCB-laden objects (e.g., transformers or drums) in the canal which eliminates a possible source in the Lower West Main Canal Unlined. The land-based geophysical survey also found no indication of PCB-laden objects beneath the surface of the ground along the banks/levees of the canals.

The ROV inspection of the Siphon indicates that no foreign objects (e.g., transformers or drums) are located inside the Siphon. The hydraulics of the Siphon indicate that for a majority of the time a positive pressure is exerted from the interior of the Siphon. This means that water is forced out of cracks or leaking joints in the Siphon and the chances of contamination leaking into the Siphon are low. Therefore, the available data and evidence indicate that the primary likely source of PCBs is located within the Siphon and is not a foreign object.

It is possible that Siphon construction/repair materials (e.g., concrete, caulking, grout, and sealants) are the primary source of contamination at the Site. PCBs were domestically manufactured and used for a variety of purposes from approximately 1929 to 1979. The information recently provided by the Irrigation District indicates that the Siphon was damaged by floodwaters in 1967, during Hurricane Beulah, and may have been repaired. Samples of the Siphon materials (e.g., concrete, caulk, grout, or sealants) were not collected by the EPA during the RI due to health and safety concerns, technical challenges, and high cost. Additionally, all options considered for the physical inspection of the interior of the Siphon introduced the potential to damage the structural integrity of the Siphon.

SITE CHARACTERISTICS

This section of the Proposed Plan describes the general physical characteristics and features of the Site and the surrounding areas including demographics and cultural features, ecological features, ground water, and natural resource features and land use.

Demographics and Cultural Features

The greater metropolitan area to which the cities of Donna and Alamo belong is the McAllen-Edinburg-Mission metropolitan area. The total population of this metropolitan area in 2010 was 774,769. There were a total of 216,471 households with an average size of 3.55 and 90.6 percent

of the population were identified as “Hispanic” or “Latino.” Per capita income in 2010 was estimated at $13,525 while the mean household income was estimated to be $47,576. The U.S. Census Bureau also estimated that 29 percent of families and 33.4 percent of people in the metropolitan area have an income below the poverty level. The 2000 Census data indicated that 80 percent of the population speaks non-English at home and that 39 percent speak English “not well,” “not at all,” or “less than well.”

Hispanic communities known as “colonias” are common along the Rio Grande River, where they exist often without basic services such as access to adequate water, sewage, housing, and health services. The Texas Department of Housing and Community Affairs characterizes these communities as low income and high unemployment areas. Five such colonias have been identified immediately south of Donna.

Ecological Features

The land use in the area is primarily agricultural; therefore, wildlife would also include species habituated to man-made environments such as the reservoirs and canal system comprising the Site. Based on field observation, the banks of the reservoir and canal system are dominated by giant reed, including riprap, and are unlikely to provide substantial habitat preferred by most species. The outer banks of the reservoir and canal system are dominated by agricultural fields.

The following types of common fish were removed from the Site during the 2012 removal action: common carp, grass carp, gizzard shad, threadfin shad, buffalo, freshwater drum, red ear sunfish, redbreast sunfish, bluegill, warmouth, largemouth bass, small mouth bass, white crappie, Rio Grande cichlid, blue tilapia, channel catfish, blue catfish, white bass, long nose gar, alligator gar, spotted gar, Mexican tetra, and plecostomus.

Several threatened and endangered (T&E) species were evaluated during the ecological risk assessment. These T&E species included the Coues’ rice rat, interior least tern, reddish egret, false spike mussel, Salina mucket, and Texas hornshell. Some or all of these species may or may not be present at the Site because of limited habitat. According to the TPWD the Coues’ rice rat prefers habitat in cattail-bulrush marshes and aquatic grassy zones near oxbow lakes. From aerial photographs the Northwest Reservoir appears to be the remnants of an oxbow lake; however, this portion of the reservoir system comprises a relatively small area in comparison to the entire reservoir and canal system. The canals are not a suitable habitat for this T&E species.

Ground Water

Hidalgo County relies primarily on surface water from the Rio Grande River which provides 97 to 98 percent of water used in the Lower Rio Grande Valley. Ground water is not the primary source of water near the Site and the ground water investigation during the RI did not reveal health concerns from the consumption of ground water. It is anticipated that future ground water use will remain the same as current ground water use in Hidalgo County which has only limited use as a source of irrigation, domestic, and municipal water.

Natural Resource Features and Land Use

The Rio Grande River serves an important biological, hydrological, and economic function for the region. Water from the Rio Grande River is used for drinking water and irrigation of agricultural land throughout the Lower Rio Grande River Valley. The Arroyo Colorado River

corridor provides downstream flood control and also provides habitat for T&E species and unique biological communities. The arroyo is popular with birdwatchers and contributes significantly to the local nature tourism industry.
The majority of the land area surrounding the Site is currently used for commercial agriculture, which is the anticipated future use, along with use of the Site's surface waters for irrigation and drinking water supply. The primary crops cultivated in Hidalgo County are sugarcane, sorghum, cotton, corn, vegetables, and citrus fruits. Hidalgo County was the state's largest sugarcane and grain sorghum producer in 2006 and also contains 85 percent of the citrus acres in Texas which makes Texas the nation's third-largest citrus producer.

Residential development is occurring north of the Northwest Reservoir while a combination of agricultural and residential areas exists north of the East and West Reservoirs.

SCOPE AND ROLE OF RESPONSE ACTION

"Operable Unit" (OU) means a discrete action that comprises an incremental step toward comprehensively addressing problems at a site. The cleanup/remediation of a site can be divided into a number of OUs depending on the complexity of the problems associated with a site. There is only one planned OU for the Site and the EPA's Preferred Alternative 6 is intended to fully address the threats to human health and the environment posed by the conditions at the Site by addressing the Siphon and contaminated sediments and by the implementation of fish removals and performance monitoring. It is possible that multiple OUs may be considered during the remedial design of the Selected Remedy in order to facilitate the implementation of the remedial action.

SUMMARY OF SITE RISKS

A Baseline Human Health Risk Assessment and an Ecological Risk Assessment were conducted to estimate the potential for current/future risk to human and ecological receptors from exposure to contaminants from the Site. The risk assessments quantify the risks associated with potential exposure to hazardous substances in the absence of a remedial action or control, including institutional controls. The risk assessments provide the basis for taking action and identify the exposure areas, exposure pathways, and contaminants that may be considered for remedial action.

Human Health Risk Assessment

The Human Health Risk Assessment (HHRA) identified potential concerns for human health from the consumption of fish caught from the Site. The HHRA results reveal that if no remedial actions or other means of control are taken for the consumption of fish from the Site then there is a potential for an increased probability of cancer for adult recreational users above the EPA's acceptable risk range and a potential for non-cancer systemic effects for child recreational users. Direct contact with other potentially affected media (i.e., soil, surface water, and sediment) does not reveal unacceptable human health concerns which includes consumption of plants from the surrounding agricultural fields and consumption of drinking water from the Site. Based on the results of the HHRA, PCBs have been retained as the only Site-related human health chemical of concern that is addressed in the FS because of the potential risks to humans from consumption of fish. The Site media and potential sediment human health Preliminary Remediation Goals based on fish consumption are identified in Table 1 (Human Health Risk Assessment Summary of

Conclusions) and Table 2 (Potential Sediment Preliminary Remediation Goals Based on Fish Consumption), of this Proposed Plan respectively.

Ecological Risk Assessment

The Ecological Risk Assessment (ERA) identified potential risks for ecological receptors from media at the Site. Chemicals of potential concern initially identified during the ERA were further evaluated using information regarding spatial extent, magnitude of exceedance, and fate and transport information to determine if further action was required to mitigate potential ecological risks. Based on the results of this analysis and the ERA, PCBs have been retained as the only Site-related chemical of concern that is addressed in the FS because of potential risks to ecological receptors from exposure to Site media. The Site media and potential sediment ecological Preliminary Remediation Goals are identified in Table 3 (Ecological Risk Assessment Summary of Conclusions) and Table 4 (Potential Ecological Preliminary Remediation Goals), of this Proposed Plan respectively.

Summary of Risk Assessments

The HHRA determined that exposure to PCBs through consumption of fish poses unacceptable human health cancer risks and non-cancer hazards. Reducing PCB levels in fish and preventing consumption of contaminated fish are two ways to reduce risk. In order to reduce PCB levels in fish it is necessary to reduce PCB levels in sediment and remove the primary likely source of PCBs (i.e., the Siphon).

The ERA identified potential concerns for ecological receptors. The human health Preliminary Remediation Goals for sediment will also address the lowest applicable sediment Preliminary Remediation Goal for ecological receptors.

REMEDIAL ACTION OBJECTIVES

The EPA's Preferred Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals), described in this Proposed Plan, will support the following Remedial Action Objectives (RAOs). These RAOs describe what the proposed Site cleanup is expected to accomplish and are established to support the evaluation of remedial alternatives. Based upon the information relating to the types of contaminants, environmental media of concern, and potential exposure pathways, RAOs were developed to aid in the development and screening of remedial alternatives.

Preliminary Remediation Goals (PRGs) are contaminant-specific concentrations used in the FS to analyze the remedial alternatives and measure the success of the selected alternatives in meeting the RAOs during and after implementation of the remedy. They are initial cleanup goals that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements, and address risks based on other information such as toxicity information from the HHRA and ERA. PRGs are refined into final contaminant-specific Remediation Goals, or cleanup levels, in the Record of Decision. The EPA proposes to select the PRGs for sediment, human and ecological receptors, and fish described in this Proposed Plan as cleanup levels in the Record of Decision.

Fish are key exposure pathways for the contaminants that are being addressed by the EPA's Preferred Alternative 6 as part of the areal extent of contamination at the Site. For this reason, it is important to establish PRGs and cleanup levels for fish to ensure protectiveness and measure progress towards achieving the RAOs. Controlling the likely source of contamination to the Site along with the remediation of contaminated sediment will reduce PCB concentrations in fish tissue and in sediment.

Remedial Action Objectives and Preliminary Remediation Goals

The RAOs and PRGs for the Site are:

- RAO 1: Reduce the long-term human health cancer risks and the non-cancer hazards from human consumption of Site fish contaminated with PCBs. This goal will be achieved by reducing the concentrations of PCBs in sediment downstream from the likely source (i.e., the Siphon) and mitigating the transport pathway from the Siphon into the Site.
    - PRG 1 – The long-term objective will be achieved by reducing the concentration of PCBs in sediment, downstream of the Siphon's exit, to less than 0.043 mg/kg Total PCB Congeners. This will achieve a Site-wide acceptable risk level of 10^{-5} adult recreational user cancer risk and a child recreational user hazard index (HI) of 1 from the consumption of fish.
    - PRG 2 – The long-term objective will also be achieved by reducing the concentration of PCBs in fish tissue, throughout the reservoir and canal system, to at or less than 0.031 mg/kg Total PCB Aroclors. This objective will be measured by performing statistical analyses of fish tissue.
- RAO 2: Reduce the short-term human health cancer risks and the non-cancer hazards from human consumption of Site fish contaminated with PCBs.
    - The short-term objective will be achieved by reducing or removing the fish from the Site possibly contaminated with PCBs and available for human consumption. This objective will be measured by the number, species, and size of the fish removed from the reservoir and canal system. Fish tissue will also be monitored for the concentrations of PCBs described under PRG 2.
- RAO 3: Reduce the risks to ecological receptors (i.e., small piscivorous birds, piscivorous mammals, benthic invertebrates, and threatened/endangered species) from exposure to PCBs in sediment.
    - Reducing the concentration of PCBs in sediment, downstream of the Siphon's exit, to less than 0.043 mg/kg Total PCB Congeners will also be protective of ecological receptors.

Sediment cleanup goals were developed from Site-specific bioaccumulation factors and calculated target risk scenarios based on human consumption of impacted fish tissue. PRGs developed in the FS included those for an adult recreational user at a 10^{-5} cancer risk level and a child recreational user non-cancer HI of 1. The cancer risks are probabilities that are expressed in

scientific notation (e.g., 1.0 x 10^{-5}). A carcinogenic risk of 10^{-4}; 10^{-5}; or 10^{-6} indicates that an individual experiencing the reasonable maximum exposure estimate for the Site has a 1 in 10,000; 1 in 100,000; or 1 in 1,000,000 chance, respectively, of developing cancer as a result of Site-related exposure. This is referred to as an excess incremental lifetime cancer risk because it would be in addition to the risks of cancer individuals face from other causes not related to the Site. The chance of an individual developing cancer from all other causes has been estimated to be as high as one in three. An HI of less than 1 indicates that no adverse non-cancer health effects are likely to be associated with chemical (i.e., PCBs) exposures at the Site.

A statistical analysis of the PCB concentrations in sediment across the reservoir and canal system, assuming removal of the sediment locations that exceed a concentration of 0.043 mg/kg corresponding to a 10^{-4} cancer risk level, results in a Site-wide sediment concentration below the 10^{-5} adult recreational user cancer risk level and the Aroclor-1254 child recreational user non-cancer HI of 1. The statistical analysis of the PCB concentrations in remaining sediment across the reservoir and canal system, after removal of the sediment locations that exceed a PRG of 0.043 mg/kg, results in an overall "95 percent upper confidence level" (95% UCL) of 0.00276 mg/kg Total PCBs in sediment. This concentration is below the calculated sediment PRGs based on, 1) a 10^{-5} adult recreational user cancer risk level corresponding to 0.004 mg/kg, and 2) an Aroclor-1254 child recreational user non-cancer HI of 1 corresponding to 0.003 mg/kg. The 95% UCL provides reasonable confidence that the true Site average will not be underestimated. An estimate of average concentration is used because: 1) carcinogenic and chronic non-carcinogenic toxicity criteria are based on lifetime average exposures, and 2) an average concentration is most representative of the concentration that would be contacted at the Site over time by human and ecological receptors.

Therefore, removal of sediment greater than 0.043 mg/kg should result in fish tissue concentrations that will be protective of an adult recreational user below a 10^{-5} cancer risk level corresponding to a 0.041 mg/kg fish tissue PRG and an Aroclor-1254 child recreational user non-cancer HI of 1 corresponding to a 0.031 mg/kg fish tissue PRG. The fish tissue PRG of 0.031 mg/kg (i.e., PRG 2) would be measured as Total PCB Aroclors, and a subset will be measured as Total PCB Congeners. This long-term objective will be achieved by reducing the concentration of PCBs in fish tissue, throughout the reservoir and canal system, to at or less than 0.031 mg/kg Total PCB Aroclors. The 95% UCL would be used to measure the attainment of this PRG for at least three sampling events for a period of five years. The sampling events and period of time to achieve this objective may be modified during the remedial design (i.e., based on the schedules for the fish removal actions and/or performance monitoring).

During the remedial process a concentration equivalent to a lifetime cancer risk of 10^{-6} is first established as a point of departure and then other factors are taken into account to determine where within the acceptable risk range of 10^{-4} to 10^{-6} the Remediation Goals for a given contaminant at a specific site should be established. The EPA is proposing a departure from a cleanup goal of 10^{-6} for this Site based on: 1) consistency with the Texas Risk Reduction Program (TRRP), which is also cost effective, and 2) existing Site soil and sediment PCB concentrations.

A chemical-specific cancer risk of 10^{-5} was chosen because the future anticipated reuse for the Site is recreational, and this risk level is consistent with the TRRP risk level of 10^{-5} (Title 30 Texas Administrative Code Chapter 350.74). To be consistent with the TRRP risk level the target risk value for the Site moved away from the point of departure of 10^{-6} and is within the target risk range of 10^{-4} to 10^{-6} specified by the NCP.

A human health risk level of 10^{-5} and an HI of 1 are achievable at this Site. The ability to achieve a 10^{-6} risk level may not be possible because of non-Site related influences of PCBs and the extremely low sediment concentration that would be necessary in order to achieve a 10^{-6} risk level (0.0004 mg/kg). Soil samples collected from 10 of 41 locations meet or exceed 0.004 mg/kg Total PCB Aroclors or Total PCB Congeners. Three soil samples were taken from the banks of the Lower West Main Canal Unlined, five from the banks of the Arroyo Colorado River, and two near irrigation risers in adjacent agricultural fields. PCBs in the Arroyo Colorado River exposure area are not considered to be Site-related. The maximum detected Total PCB concentration in the soil of the Arroyo Colorado was 0.013 mg/kg which is more than 3 times the sediment concentration of 0.004 mg/kg corresponding to a 10^{-5} cancer risk level. Concentrations of Total PCB Congeners in the Arroyo Colorado River soil range from 0.0007 to 0.013 mg/kg with an arithmetic average of 0.004 mg/kg. Soil with concentrations above 0.004 mg/kg may become airborne and deposited in the reservoir and canal system and may complicate attempts to reach sediment levels of 0.004 mg/kg, including the sediment level of 0.0004 mg/kg (which is the sediment concentration corresponding to a 10^{-6} cancer risk level), by serving as a residual source of contamination. Five sediment samples collected upgradient of the Siphon meet or exceed 0.004 mg/kg Total PCBs in sediment. These soil and sediment concentrations are not Site-related and are expected to represent background concentrations.

SUMMARY OF REMEDIAL ALTERNATIVES

The following remedial alternatives were evaluated to address the impacted sediment and fish, including the Siphon the likely source of contamination:

- **Alternative 1**: No Further Action.
- **Alternative 2**: Limited Action.
- **Alternative 3**: Slipline Siphon, Canal Dredging/Excavation, and Fish Removals.
- **Alternative 6**: Replace Siphon, Canal Dredging/Excavation, and Fish Removals.

The common remedial alternative elements, the EPA's Preferred Alternative 6, and the other alternatives evaluated are discussed further in this Proposed Plan.

Common Remedial Alternative Elements

This section of the Proposed Plan provides some common remedial alternative elements applicable to all alternatives, except for Alternative 1 (No Further Action), which were considered in addressing the fish and sediment contamination at the Site. These common remedial alternative elements include: "Institutional and Engineering Controls," "Performance Monitoring," "Fish Removals," "Public Outreach and Education," and "Five-Year Reviews."

Institutional and Engineering Controls

Alternatives 2, 3, and 6 continue and/or enhance the Institutional Controls (ICs) for the Site. ICs are non-engineering instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contaminants and/or protect the integrity of a response action by

limiting land or resource use. ICs also provide information and notification to interested persons and communities about any residual contamination left at a site and any restrictions as a result of the remaining contamination. ICs typically are used in conjunction with engineering controls or measures. The engineering controls considered at this Site are: 1) Sliplining or replacement of the Siphon (i.e., the likely source of the PCBs), and 2) Removal and disposal of the PCB-contaminated sediment located hydraulically downstream from the existing Siphon's exit. The NCP emphasizes that ICs are meant to supplement engineering controls. ICs can include instruments such as signs and/or fencing that are used to minimize access to contaminated areas or areas that may pose a physical hazard. ICs and engineering controls can be used to accomplish various remedial objectives and could be implemented in a series during this remedial action to provide protectiveness of human health and the environment.

The following ICs should be implemented at the Site:

- An IC(s), in the form of a land-use restriction or notice as to the environmental conditions of the property, will be required that provides restrictions on or notification of the modifications to the constructed Siphon under Alternatives 3 and 6 (i.e., sliplining or replacement of the Siphon, respectively) and which would protect the integrity of the final remedy. The IC could consist of either a restrictive covenant or a deed notice. The requirements for filing land use restrictions in the State of Texas are specified in "30 Texas Administrative Code Chapter 350 Subchapter F." A restrictive covenant, or deed notice, is an instrument filed in the real property records of the county where the affected property is located.

- Signs would be required which warn anglers of the risks associated with the consumption of fish from the Site.

- The existing "Aquatic Life Order Number 9," issued by the TDH (predecessor of the TDSHS), should remain in place until fish tissue levels are safe for human consumption. Knowledge of the order would be enhanced with additional community outreach to encourage greater awareness of the prohibitions concerning the taking of all fish species from the Site until the concentrations of PCBs in fish tissue reach protective concentrations corresponding to the Remediation Goals specified in the Record of Decision.

Performance Monitoring

Alternatives 3 and 6 include performance monitoring to evaluate whether the RAOs for the Site are being met. Performance monitoring would also be conducted to ensure that the remedy remains protective of human health and the environment. Subsequent to the completion of the remedy, protectiveness of the remedy implemented will be evaluated during the Five-Year Reviews required by CERCLA for the Site.

Performance monitoring would occur for a period of time beginning with the collection of baseline data. Monitoring could include performance standards related to remedy implementation and will be developed during the remedial design of the remedy described in the Record of Decision. These performance standards which will be incorporated into design documents will promote accountability and ensure that the remedy meets the RAOs stated in the Record of Decision.

Fish Removals

Alternatives 3 and 6 will include up to five fish removals, over a period of five years, which would either begin after the completion of the construction phase of the remedial action stated in the Record of Decision or be determined during the remedial design of the remedy. The purpose of the fish removal actions is to remove fish, possibly contaminated with PCBs and which are available for human consumption, from the reservoir and canal system. These fish removals will enhance the effectiveness of the remedial alternatives by achieving the Remediation Goals for fish tissue concentration levels by removing all fish captured, especially the larger fish which bioaccumulate greater concentrations of PCBs through the food chain. Additional techniques (e.g., use of gill nets, seines, dragnets, fish movement barriers, etc.) to supplement the electroshocking methods, determined during remedial design, are planned to be employed to remove the maximum amount of fish possible during the planned removal actions. A maximum amount of fish may also be removed by coordinating the fish removals with the Irrigation District (i.e., removal of fish during low water conditions).

Public Outreach and Education

Alternatives 2, 3, and 6 include a public outreach and educational program. In order to be successful, this program will rely on partnerships with state (i.e., TDSHS, TPWD, and others), city (i.e., Cities of Donna and Alamo, and other cities), and local entities (i.e., Irrigation District, Hidalgo County [Precincts 1 and 2], and other counties), as well as community-based organizations, to develop activities and measures to reduce the public's exposure to fish from the Site. Following are outreach and educational activities and programs that may be considered for implementation at the Site:

- Warnings (i.e., English/Spanish) printed on water or other utility bills, received by the public, concerning consumption of fish from the Site. These bills are expected to reach a large portion of the nearby communities such as every residence and business in Donna and Alamo, Texas.

- Support from community-based organizations such as non-governmental organizations (NGOs), media, and community relations specialists to inform people about the risk of consuming contaminated fish.

- Partnering with health fairs, community fairs, and state/local health departments to provide educational materials and training in multiple languages.

- Distribution of specific outreach materials and messages focused on women of child-bearing age who consume fish as a part of their diet.

- Conduct outreach, in coordination with the TDSHS, to commercial fish market owners to inform them about the risks of buying fish from unlicensed vendors.

- Educate anglers about the contaminated fish at the Site and the TDSHS' enforceable "Aquatic Life Order Number 9" which prohibits the taking of all species of aquatic life from the Site.

- Coordinate enforcement efforts, of the TDSHS' "Aquatic Life Order Number 9," with the TPWD and appropriate law enforcement officials by notifying the appropriate authorities of individuals accessing the Irrigation District's private property.

- Reducing the potential risks posed by consumption of contaminated fish from the Site by coordinating with the local communities to identify an alternate fishing location(s) near the Site, routinely stock this nearby lake/reservoir, and advertise the alternate fishing location.

Five-Year Reviews

Per CERCLA Section 121(c), 42 U.S.C. § 9621(a), the final remedy for the Site will require statutory Five-Year Reviews since contaminants (i.e., PCBs) will be left on-Site above levels that permit unrestricted use and unlimited exposure. Although the EPA routinely evaluates the remedy, a formal review will occur every five years in the form of a Five-Year Review Report where the EPA will evaluate the performance of the remedy (i.e., protectiveness of human health and the environment, and effectiveness of the ICs).

Descriptions of Remedial Alternatives

Alternative 1 – No Further Action

Estimated Time for Design/Construction: Not Applicable
Estimated Time to Reach Remediation Goals: Not Applicable
Estimated Capital Costs: $0
Estimated Lifetime Costs: $0
Estimated Total Present Worth Costs: $0
Discount Rate: Not Applicable
Number of Years Costs Are Projected: Not Applicable

As required by the NCP, 40 CFR § 300.430 (e)(6), the alternatives evaluations must include a No Further Action (NFA) Alternative. This alternative is used as the baseline alternative against which the effectiveness of all other remedial alternatives are evaluated. The EPA would take no further action under the NFA Alternative. No further attempts would be made to reduce the PCB concentrations in fish and sediment or limit consumption of fish with unacceptable levels of PCBs. Additionally, no attempts would be made to slipline/replace the Siphon or remove fish contaminated with PCBs from the Site.

Alternative 2 – Limited Action

Estimated Time for Construction: Not Applicable
Estimated Time to Reach Remediation Goals: Not Applicable
Estimated Capital Costs: $8,000
Estimated Lifetime Community Involvement and Engineering Controls: $1,630,000
Estimated Total Present Worth Costs: $1,640,000
Discount Rate: 7%
Number of Years Costs Are Projected: 30 Years

Alternative 2 (Limited Action) includes community involvement, ICs, and engineering controls. No other actions would be taken (i.e., removal of fish or sediment, construction of Siphon alternatives, or performance monitoring of fish and sediment).

Alternative 3 – Slipline Siphon, Canal Dredging/Excavation, and Fish Removals

Estimated Time for Construction: 7 months
Estimated Time to Reach Remediation Goals: 10 years
Estimated Remedial Action Costs: $14,410,000
Estimated Post Remedial Action Costs: $1,150,000
Estimated Total Present Worth Costs: $15,600,000
Discount Rate: 7%
Number of Years Costs Are Projected: 10 Years

Alternative 3 (Slipline Siphon, Canal Dredging/Excavation, and Fish Removals) includes sliplining the Siphon to mitigate the transport pathway from the likely PCB source into the Site and the dredging/excavation of PCB-contaminated sediment downstream of the Siphon's exit. Alternative 3 would also include up to five fish removals over a period of 5 years; fish tissue sampling and monitoring annually for 5 years and at years 7 and 9 post construction, sediment sampling and monitoring downstream of the Siphon's exit annually for 5 years, and Site-wide sediment sampling at year 4 post construction if the RAOs for fish tissue are not being met.

The purpose of the dredging/excavation of the PCB-contaminated sediment downstream of the Siphon's exit is to reduce sediment PCB concentrations to below the PRG. Figure 4 (Sediment Remediation Area) depicts the sediment remediation area. This sediment remediation area is the only part of the reservoir and canal system, studied during the RI, which exceeds the PRG.

Alternative 3 utilizes a barrier between the interior wall of the existing Siphon and the water that flows through it from the Main Canal to the Lower West Main Canal Unlined to isolate contaminant migration pathways. Sliplining of existing pipelines is typically used to restore the structural integrity of a pipeline and is accomplished by installing a smaller pipe into the existing pipeline. The smaller pipe is anchored into the existing pipeline by filling the void space with grout. Upon completion the pre-existing Siphon would no longer be in contact with water that flows through it, and the smaller pipe would prevent the leaching of PCBs into the water column. The structural integrity of the existing Siphon is questionable due to the age of the structure which was built in approximately 1926. There are complexities associated with the installation of the slipline such as obtaining the proper alignment within the existing Siphon and the filling of the void space with grout.

Construction work would need to be coordinated with the Irrigation District prior to the implementation of construction activities. During sliplining activities, the flow of water through the Siphon would have to be temporarily suspended for an estimated period of two weeks to allow construction to be performed. However, for the purposes of cost estimation and to prevent disruption of services it was assumed that a temporary bypass pump and pipeline system would be setup during construction activities so that the Irrigation District can continue to move water from the Main Canal to the Lower West Main Canal Unlined. There are complexities associated with the installation of a temporary bypass such as obtaining the proper access and coordination with the entities which have jurisdiction over the location of the bypass equipment.

Post slipline installation activities would include backfill, grading, and utilizing native vegetation for the temporary access points to prevent erosion in the area. The entire construction phase for sliplining the Siphon is estimated to take two months to complete.

The area to be remediated to reach the PRG spans the width of the Lower West Main Canal Unlined approximately 4,500 ft beyond the Siphon's exit (i.e., an area approximately 55 ft wide by 4,500 ft in length) as shown in Figure 4 (Sediment Remediation Area). Approximately 20 inches of sediment, which corresponds to approximately 20,000 cubic yards, would be removed from the canal. This estimate accounts for approximately 6 inches of operator error during removal. Twenty inches of sediment is the approximate thickness of soft sediment which was estimated from sediment cores during the RI. Sediment would be removed until the PRG is achieved.

During the removal of sediment from the canal a temporary bridge would be installed adjacent to the existing bridge downstream of the Siphon's exit to allow agricultural equipment and vehicles to cross the canal during the implementation of the remedial action. Silt curtains would be installed to capture the suspended sediment in order to prevent migration of contamination into the water column and downstream during dredging/excavation activities; unless, the removal of sediment can be accomplished during low water conditions in coordination with the Irrigation District.

Contaminated sediment material would be partially dewatered at the Site using a series of watertight rolloffs and fractionation tanks and the sediment would be stabilized and transported to an approved off-site disposal facility. Disposal of sediment would comply with the appropriate waste disposal requirements. It is assumed that the sediment would be disposed as nonhazardous waste due to low PCB concentrations. Prior to the restoration of the remediation area confirmation samples would be collected as necessary to ensure that the remediation satisfies the RAOs for the Site. The estimated construction time for the removal of sediment downstream of the Siphon's exit is five months and at no time during these activities would the canal system need to be shutdown.

Fish removals may be performed through electroshocking methods and other methods on an annual basis for up to five years to remove fish from the reservoir and canal system possibly contaminated with PCBs and which are available for human consumption. These fish removals will aid in meeting the RAOs for fish tissue. Fish removals would take place in all sections of the Site. The fish would be collected in drums and disposed of at an off-site disposal facility. Other fish removal methods (e.g., hoop, fyke, and pound nets, etc.) could be used to supplement the removal efforts.

Post construction monitoring of fish tissue concentrations would be performed annually for 5 years and at years 7 and 9 to evaluate whether the RAOs for fish tissue are being met. Although the types, number, and locations of fish to be collected during performance monitoring would be determined during the remedial design of the selected remedy, bottom feeders and predatory fish could be collected from each of the following five established fish collection areas:

- Main Canal – Near the Rio Grande Pump Station.
- Main Canal – Near the weir and the Siphon's entrance.

- Lower West Main Canal Unlined – Near the Siphon's exit.
- Lower West Main Canal Unlined – Near the bridge at FM 1493.
- West Reservoir.

Community involvement and engineering controls would be implemented for a period of 10 years. ICs would be implemented for a longer period of time if necessary to protect the final remedy. Evaluation of the protectiveness of the remedy will be performed during the Five-Year Reviews for the Site.

Alternative 6 – Replace Siphon, Canal Dredging/Excavation, and Fish Removals

Estimated Time for Construction: 9 months
Estimated Time to Reach Remediation Goals: 10 years
Estimated Remedial Action Costs: $18,710,000
Estimated Post Remedial Action Costs: $700,000
Estimated Total Present Worth Costs: $19,400,000 (Costs for Land Acquisition Not Included)
Discount Rate: 7%
Number of Years Costs Are Projected: 10 years

The EPA's Preferred Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals) includes the implementation of an "iterative/flexible approach" for addressing the existing Siphon, the likely source of contamination, the dredging/excavation of PCB-contaminated sediment downstream of the Siphon's exit, and the new siphon. The determination of the extent and timing of the specific remedial actions for each of these components from Alternative 6 will be made during the remedial design phase and implemented during the remedial action phase of the Site's remedy. These specific remedial actions will include the direct sampling of the existing Siphon's construction materials (e.g., concrete, caulk, grout, or sealants), following dewatering of the Siphon and foremost considering worker safety and the structural integrity of the Siphon, to confirm the likely source of the PCBs and to address uncertainty. A decision could then be made on whether to proceed with the remedial action for the new siphon. These specific remedial actions may also include the extent and timing for the fish removals and performance monitoring to determine whether the RAOs for the Site are being met. Additionally, decision points will be developed during the remedial design to guide the implementation of the remedial action for Alternative 6. This iterative/flexible approach is discussed further in the "Summary of the EPA's Preferred Alternative 6" section of this Proposed Plan. For the purposes of cost estimation this alternative assumes the full replacement costs for the new siphon.

Alternative 6 includes the construction of a new siphon to replace the existing Siphon. A new siphon would be constructed adjacent to the existing Siphon because the irrigation canal system can only be inoperable for short periods of time. The profile of the new siphon would approximately follow the profile of the existing Siphon. A possible location for the replacement siphon is depicted in Figure 5 (Siphon Replacement). The selection of a location would require the acquisition of land. The area would be prepared for construction activities (i.e. surveyed, cleared of brush, etc.) prior to the construction of the new siphon. The new siphon would be built using a 108-inch inner diameter pre-stressed concrete pipeline placed in a trench excavated 15 to 20 ft below the ground's surface. The greatest challenge to the installation occurs where the new siphon intersects the Arroyo Colorado River. The river would have to be temporarily diverted (e.g., cofferdams, dewatering pumps, etc.) to allow for construction to be completed in this area.

This diversion would require coordination with Hidalgo County and the International Boundary and Water Commission.

In addition to a new siphon, approximately 200 ft of the north end of the Main Canal and 400 ft of the south end of the Lower West Main Canal Unlined would need to be modified in order to connect to the new siphon. The new canal segments would contain concrete lining and transition to and from the siphon's entrance and exit, respectively. Alternative 6 would require the construction of a new flow control gate (i.e., weir) near the entrance of the Siphon (Figure 5 – Siphon Replacement) in order to control water flow into the siphon because the existing weir would no longer be in alignment with the canal system.

Once siphon construction and canal modifications are completed, water can be diverted into the new siphon and the existing Siphon would be dewatered and completely sealed (i.e., grouted) to prevent exposure to human and ecological receptors. Any fish in the Siphon at the time of dewatering would be removed and properly disposed of. Low permeability grout would be injected from both ends of the Siphon with a possibility of injection from above the alignment.

Alternative 6 assumes that no shutdown of the existing flow of water through the irrigation canal system is necessary to complete the required construction. Cofferdams would be installed around the canal modification areas, and a series of pumps would be used to bypass the construction area. Cost savings may be achieved if temporary shutdown, coordinated with the Irrigation District, is possible during construction of the new siphon. Post siphon replacement activities would include backfill, grading, and utilizing native vegetation for the temporary access points used to abandon the existing Siphon.

The area to be remediated to reach the PRG spans the width of the Lower West Main Canal Unlined approximately 4,500 ft beyond the existing Siphon's exit (i.e., an area approximately 55 ft wide by 4,500 ft in length) as shown in Figure 4 (Sediment Remediation Area). Approximately 20 inches of sediment, which corresponds to approximately 20,000 cubic yards, would be removed from the canal. This estimate accounts for approximately 6 inches of operator error during removal. Twenty inches of sediment is the approximate thickness of soft sediment which was estimated from sediment cores during the RI. Sediment would be removed until the PRG is achieved.

During the removal of sediment from the canal a temporary bridge would be installed adjacent to the existing bridge downstream of the Siphon's exit to allow agricultural equipment and vehicles to cross the canal during the implementation of the remedial action. Silt curtains would be installed to capture the suspended sediment in order to prevent migration of contamination into the water column and downstream during dredging/excavation activities; unless, the removal of sediment can be accomplished during low water conditions in coordination with the Irrigation District.

Contaminated sediment material would be partially dewatered at the Site using a series of watertight rolloffs and fractionation tanks and the sediment would be stabilized and transported to an approved off-site disposal facility. Disposal of sediment would comply with the appropriate waste disposal requirements. It is assumed that the sediment would be disposed as nonhazardous waste due to low PCB concentrations. Prior to the restoration of the remediation area confirmation samples would be collected as necessary to ensure that the remediation satisfies the RAOs for the Site. The estimated construction time for the removal of sediment downstream of

the Siphon's exit is five months and at no time during these activities would the canal system need to be shutdown.

Fish removals may be performed through electroshocking methods, including other methods, on an annual basis for up to five years to remove fish from the reservoir and canal system possibly contaminated with PCBs and which are available for human consumption. These fish removals will aid in meeting the RAOs for fish tissue. Fish removals would take place in all sections of the Site. The fish would be collected in drums and disposed of at an off-site disposal facility. Other fish removal methods (e.g., hoop, fyke, and pound nets, etc.) could be used to supplement the removal efforts.

Post construction monitoring of fish tissue concentrations would be performed annually for 5 years and at years 7 and 9 to evaluate whether the RAOs for fish tissue are being met. Although the types, number, and locations of fish to be collected during performance monitoring would be determined during the remedial design of the selected remedy, bottom feeders and predatory fish could be collected from each of the five established fish collection areas identified under Alternative 3.

The entire construction phase of this remedy component is estimated to take 9 months to complete. The costs to negotiate land easements and/or land purchase(s) for a replacement siphon have not been included in the total costs for Alternative 6.

Community involvement and engineering controls would be implemented for a period of 10 years. ICs would be implemented for a longer period of time if necessary to protect the final remedy. Evaluation of the protectiveness of the remedy will be performed during the Five-Year Reviews for the Site.

COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

The NCP, 40 CFR § 300.430(e)(9)(iii), requires the use of nine criteria to evaluate the different remedial alternatives individually and in comparison to each other. The two threshold criteria which are requirements that each alternative must meet in order to be eligible for selection, are: 1) overall protection of human health and the environment, and 2) compliance with "applicable or relevant and appropriate requirements" (ARARs). The five primary balancing criteria which are used to weigh major trade-offs among alternatives are: 3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility or volume through treatment; 5) short-term effectiveness; 6) implementability; and 7) cost. The two modifying criteria are: 8) state acceptance, and 9) community acceptance. The EPA assesses public comments on the Proposed Plan to gauge community acceptance and will respond to each public comment received in the "Responsiveness Summary" of the Record of Decision.

The statutory requirements under CERCLA Section 121(b), 42 U.S.C. § 9621(b), states that remedial actions must accomplish the following:

- Be protective of human health and the environment;
- Attain ARARs or provide grounds for invoking a waiver;
- Be cost effective;

- Use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and

- Satisfy the preference for treatment that reduces toxicity, mobility, and volume as a principal element or explain why it does not meet this criterion.

This section of the Proposed Plan discusses the relative performance of each alternative against the NCP's nine criteria and the EPA's rationale for proposing Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals). The FS Report, included in the Administrative Record file for the Site, contains a detailed analysis of each alternative against the NCP's nine criteria and a comparative analysis of how the alternatives compare to each other.

Threshold Criteria

1. **Overall Protection of Human Health and the Environment:** *This criterion addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or ICs.*

Alternative 1, the NFA Alternative, ranks lowest, in the evaluation criterion for "Overall Protection of Human Health and the Environment," followed by Alternative 2 (Limited Action). Alternative 1 is not protective of human health and the environment. Alternative 2 does not address protection to the environment and will not meet the ecological RAO. Under both of these alternatives, the Siphon would continue to act as the primary likely source of contamination which poses an unacceptable risk to human health and ecological receptors. Fish would continue to pose an unacceptable risk to human receptors and ecological receptors would continue to be exposed to contaminated sediment in the canal system. No efforts would be made to remove contaminated fish from the canal system and controls in the form of signs and community involvement would only warn the public of the risks associated with fish consumption.

Alternatives 3 (Slipline Siphon, Canal Dredging/Excavation, and Fish Removals) and 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals) would provide the highest level of overall protection to human health and the environment because sliplining or replacing the Siphon, respectively, mitigates the transport pathway from the likely PCB source into the Site. Both of these alternatives comply with the threshold evaluation criterion of "Overall Protection of Human Health and the Environment." Under both alternatives, removal of the PCB-contaminated sediment downstream of the Siphon's exit will reduce sediment PCB concentrations to below 0.043 mg/kg. Figure 4 (Sediment Remediation Area) depicts the sediment remediation area under Alternatives 3 and 6. For both alternatives, reducing the sediment PCB concentrations to below the PRG of 0.043 mg/kg will achieve an acceptable cancer risk level of 10^{-5} (i.e., for an adult recreational user) and a Site-wide HI of 1 (i.e., for a child recreational user) from consumption of fish. While reductions in fish tissue will occur naturally under Alternatives 3 and 6, annual fish removals will reduce unacceptable risk to human receptors faster than if no fish removals occurred. Additionally, reducing the sediment PCB concentrations to below the PRG will also be protective of ecological receptors under both alternatives.

2. **Compliance with Applicable or Relevant and Appropriate Requirements:** *Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and 40 CFR § 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as ARARs, unless such ARARs are waived under CERCLA section 121(d)(4), 42 U.S.C. § 9621(d)(4).*

Alternative 1 would not meet the U.S. Food and Drug Administration tolerance level for PCBs (i.e., 2.0 mg/kg) in fish. Alternative 2 does not comply with the threshold criteria of protection of human health and the environment.

It is anticipated that Alternatives 3 and 6 would meet all applicable ARARs, including those related to PCBs and the Toxic Substances Control Act (TSCA), and are assumed to comply with the chemical-, location-, and action-specific ARARs because the required engineering design and agency review process can ensure that the selected remedy is in compliance. Both alternatives comply with the threshold evaluation criterion of "Compliance with Applicable or Relevant and Appropriate Requirements." These alternatives can be designed and implemented in compliance with ARARs pertaining to the management and disposal of generated materials (i.e., sediment and fish). Further, the remedial design phase of the remedy can address the various land use and resource protection ARAR requirements (e.g., habitat preservation and mitigation). Table 6 (Tentative Determination of Applicable or Relevant and Appropriate Requirements and To Be Considered Items), of this Proposed Plan, includes the ARARs applicable to Alternatives 3 and 6.

Balancing Criteria

3. **Long-term Effectiveness and Permanence:** *This criterion refers to expected residual risk and the ability to maintain reliable protection of human health over time, once cleanup levels have been met*.

Alternative 1 ranks lowest in the evaluation criterion for "Long-term Effectiveness and Permanence," followed by Alternative 2. These alternatives do not provide long-term effectiveness as there is no active remediation of the PCBs at the Site. The likely source (i.e., the Siphon) would continue to deposit PCBs in the downstream sediment until the contaminants in the likely source material are depleted. Also, PCBs would continue to bioaccumulate and biomagnify through the food chain.

Alternatives 3 and 6 provide long-term effectiveness and permanence because sliplining or replacing the Siphon, respectively, mitigates the transport pathway from the likely PCB source into the Site in the long-term and are permanent source removal remedies. However, Alternative 6 provides a higher level of long-term effectiveness and permanence than Alternative 3 because the existing Siphon, after sliplining under Alternative 3, could lose structural stability due to the age of the structure which was built in approximately 1926. Under Alternative 6 a new structure would be required. Removal of the PCB-contaminated sediment downstream of the Siphon's exit will reduce sediment PCB concentrations to below the human health PRGs under both alternatives. Additionally, annual fish removals would eliminate residual contamination from the system. Removal of contaminated sediment and mitigating the likely source of the PCBs into the Site will also be protective of ecological receptors under both alternatives.

4. **Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment:** *This criterion refers to the anticipated performance of the treatment technologies that may be included as part of a remedy*.

The NCP establishes preference for use of treatment to address the principal threats posed by a site wherever practicable. The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Principal threat wastes are those materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. Low-level threat wastes are those materials that generally can be reliably contained and that would present only a low risk in the event of exposure.

Alternatives 1 and 2 do not provide any reduction in toxicity, mobility, or volume, and are therefore ranked the lowest of all alternatives. Although none of the alternatives include treatment technologies (i.e., destruction of toxic contaminants), Alternatives 3 and 6 will reduce the same volume of contaminated sediment from the Site and will effectively reduce the mobility of source contamination because PCBs cannot leach into the surface water, from the Siphon, once these remedies are implemented.

The Siphon and the PCB-contaminated sediment at the Site are not considered principal threat waste. Alternatives 3 and 6 do not include the statutory preference for treatment of the PCB-contaminated sediment because the PCB concentrations will not require treatment of the sediment according to federal ARARs (i.e., TSCA). Only media with concentrations greater than 50.0 mg/kg are considered PCB remediation wastes. Therefore, because the maximum detected PCB concentration in sediment at the Site was 11.0 mg/kg, Site sediments are not considered PCB remediation waste subject to specific disposal requirements.

5. **Short-term Effectiveness:** *This criterion addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during implementation*.

No activity is performed under Alternative 1, the NFA alternative, and therefore it poses no additional short-term impacts to the community. Alternative 2 provides minimal or low short-term impacts to the community in terms of the carbon footprint associated with community involvement and controls implemented at the Site (i.e., activities associated with the installation of signs and travel for the community involvement representatives).

The community could be affected by an increase in traffic caused by the transportation of equipment and material under Alternatives 3 and 6. The local agricultural industry may be affected by limited road access near remedial action construction areas. A temporary bridge to facilitate agricultural traffic over the canal during remedial activities could be constructed; however, access to fields located directly adjacent to the canal segments at the entrance and exit of the Siphon may be impeded. Additionally, dust may be produced during construction and transportation activities, but can be mitigated through standard construction practices. Environmental impacts associated with construction around the new or existing Siphon include the effects of diverting/dewatering the Arroyo Colorado River and the Siphon. Environmental impacts associated with the dredging or excavation of sediment from the canal and fish removals

include reducing the population of benthic organisms and fish. Although silt curtains would be used if needed, dredging/excavating the canal would also disturb sediment which could increase exposure to downstream ecological receptors. Additionally, air emissions from heavy equipment and vehicles would contribute to negative impacts to the environment.

The largest factor when evaluating short-term effectiveness at this Site is the length of time it would take to perform construction activities. The construction time has a direct correlation to the risks associated with construction and transportation activities as well as the carbon footprint associated with these activities. Based on these criterion, Alternative 6 ranks the lowest because construction of the remedy requires an estimated 9 months to complete. Alternative 3 is ranked higher because construction of the remedy requires an estimated 7 months to complete. The time to achieve the RAOs for Alternatives 3 and 6 are the same.

6. **Implementability:** *This criterion considers the technical and administrative feasibility of a remedy such as relative availability of goods and services and coordination with other governmental entities.*

The implementability evaluation criterion ranks the highest when complication from construction is the lowest. Implementability is not applicable to Alternative 1 since no action would be taken. Alternative 2 has the highest implementability, compared to Alternatives 3 and 6, due to the absence of a construction component.

Alternatives 6 and 3 rank second highest and third highest with respect to construction implementability. Alternative 6 ranks higher than Alternative 3, based on land acquisition, because implementation of the slipline remedy will not require the potential acquisition of land. Alternative 3 also includes complexities associated with installation of the slipline and the structural integrity and the age of the structure which was built in approximately 1926. Under Alternative 6 a new structure would be required. Alternative 3 includes complexities associated with the installation of the slipline and obtaining the proper alignment within the existing Siphon and the filling of the void space with grout. Alternative 6 includes construction complexities associated with the potential acquisition of land for the new siphon. Both alternatives include construction complexities associated with coordination with the Irrigation District for sediment dredging/excavation, seasonal construction for certain dredging/excavation components, and the length of construction time. Both alternatives would also require coordination with numerous governmental entities who may have control or ownership over the construction area, especially during the implementation of the sliplining or replacement of the Siphon. Specifically, these activities would have to be coordinated with the International Boundary and Water Commission which has jurisdiction of the levees located at the entrance and near the exit of the Siphon. The administrative feasibility to construct the remedy, implement the monitoring requirements, access the equipment and specialists, and coordinate with the appropriate regulatory agencies are the same for Alternatives 3 and 6. However, the overall implementability for Alternative 6 would rank higher than Alternative 3 due to the complexities associated with the installation of the slipline such as obtaining the proper alignment within the existing Siphon and the filling of the void space with grout under Alternative 3. Additionally, Alternative 6 would rank higher than Alternative 3 due to the fact that the structural integrity of the existing Siphon may complicate the installation of the slipline due to the age of the structure which was built in approximately 1926. Under Alternative 6 a new structure would be required.

7. **Cost:** *This criterion includes estimated capital and operation and maintenance costs as well as present worth costs. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.*

Selection of the Preferred Alternative is not solely based on cost; however, cost can be used to select between alternatives that perform comparably when evaluated with the other NCP remedial alternative evaluation criteria. Table 5 (Cost for Each Alternative), of this Proposed Plan, lists the costs for each of the alternatives.

There are no costs associated with Alternative 1. Alternative 2 costs less to implement than Alternatives 3 and 6; however, Alternative 2 does not comply with the threshold criteria of protection of human health and the environment. Alternatives 3 and 6 meet the threshold criteria and would perform favorably when compared against the other NCP criteria; however, Alternative 6 provides a higher level of long-term effectiveness and permanence than Alternative 3. Alternative 3 is estimated to cost $3,800,000 less to implement than Alternative 6 which is estimated to cost $19,400,000 to implement.

Modifying Criteria

8. **State/Support Agency Acceptance:** *This criterion considers whether the State agrees with the EPA's analyses and recommendations of the RI/FS and the Proposed Plan.*

The EPA consulted with the TCEQ during the preparation of this Proposed Plan, which describes the EPA's Preferred Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals). The State has been provided the opportunity to review the RI/FS Report, Human Health and Ecological Risk Assessment Reports, and this Proposed Plan. The EPA will request concurrence from the TCEQ upon completion of the public comment period and prior to the issuance of the Record of Decision which describes the EPA's final remedial alternative decision.

9. **Community Acceptance:** *This criterion considers whether the local community agrees with the EPA's analyses and the Preferred Alternative. Any comments received on the Proposed Plan are an important indicator of community acceptance.*

Community acceptance of the EPA's Preferred Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals) will be evaluated after the public comment period has ended. The EPA will respond to each public comment received in the "Responsiveness Summary" of the Record of Decision. The EPA has met with local, county, and state public officials (i.e., Mayors and City Managers for the Cities of Donna and Alamo, Hidalgo County representatives, Texas Secretary of State representatives, TCEQ, and other public officials), including several community-based organizations (i.e., non-governmental organizations or others) during the implementation of the RI and fish removal actions. These meetings have helped the EPA in becoming aware of the issues and concerns held by the public and in preparing this Proposed Plan.

SUMMARY OF THE EPA'S PREFERRED ALTERNATIVE 6

Based on the information currently available, it is the EPA's conclusion that the Preferred Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals) is necessary to protect public health and the environment from actual or threatened releases of hazardous substances into the environment. This alternative decision can change in response to comments received from the TCEQ (i.e., NCP Criterion 8 [State/Support Agency Acceptance]), the public (i.e., NCP Criterion 9 [Community Acceptance]), or based on new information.

Compliance with the NCP's Criteria and Statutory Requirements

The EPA believes that the Preferred Alternative 6 meets the NCP's threshold criteria and provides the best option among the other alternatives with respect to the NCP's balancing and modifying criteria. The EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b), 42 U.S.C. §9621(b): (1) be protective of human health and the environment, (2) comply with ARARs, (3) be cost-effective, (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and (5) satisfy the preference for treatment as a principal element or explain why the preference for treatment will not be met. Alternative 6 provides long-term effectiveness, permanence, short-term effectiveness, higher implementability, and compliance with ARARs, which are discussed under each of the NCP criteria.

During the remedial process a concentration equivalent to a lifetime cancer risk of 10^{-6} is first established as a point of departure and then other factors are taken into account to determine where within the acceptable risk range of 10^{-4} to 10^{-6} the Remediation Goals for a given contaminant at a specific site should be established. The EPA is proposing a departure from a cleanup goal of 10^{-6} for this Site based on: 1) consistency with the Texas Risk Reduction Program, which is also cost effective, and 2) existing Site soil and sediment PCB concentrations.

Summary of Alternative 6 Components

The EPA's Preferred Alternative 6 includes the replacement of the existing Siphon and mitigating the transport pathway from the likely source of PCBs into the Site and reducing sediment PCB concentrations downstream of the existing Siphon's exit. Alternative 6 includes up to five fish removals over a period of five years; fish tissue and sediment monitoring; community involvement activities, as needed or planned for ten years; and maintenance of ICs.

Iterative/Flexible Approach

During the performance of the remedial action for Alternative 6 the EPA intends to implement an "iterative/flexible approach" for addressing the existing Siphon (i.e., the likely source of PCB contamination), the dredging/excavation of PCB-contaminated sediment downstream of the Siphon's exit, and the new siphon. The determination of the extent and timing of the specific remedial actions for each of the components comprising Alternative 6 will be made during the remedial design phase and implemented during the remedial action phase of the Site's remedy.

This approach would include the development of a "Remedial Action Management Plan" (RAMP) since the cleanup levels or RAOs for the Site are not expected to be achieved within a

few years after active remediation. This plan would specify key indicators or monitored parameters (i.e., PCBs) that represent the Site's RAOs, select specific trigger criteria (i.e., sediment/fish tissue concentrations, or other relevant criteria) of those key indicators that might trigger the sequence of remedial actions and decisions, and specify the specific remedial actions to be implemented based on attainment or non-attainment of the trigger criteria.

The specific remedial actions would include performance monitoring, for a specific period of time, of fish tissue and sediment concentrations after the removal of the contaminated sediment downstream of the existing Siphon's exit and decisions could then be made on whether to proceed with the remedial action for the new siphon depending on whether the RAOs for the Site are being met. Specific remedial actions will also include the direct sampling of the existing Siphon's construction materials (e.g., concrete, caulk, grout, or sealants), following dewatering of the Siphon, and foremost considering worker safety and the structural integrity of the Siphon, to confirm the likely source of the PCBs and to address uncertainty. Other specific remedial actions would be specified in the RAMP.

The specific sequence of remedial actions and construction decisions that need to be considered before the implementation of the iterative/flexible approach will need to be determined during the remedial design and the development of the RAMP. Sequencing for each construction phase of the remedial action for Alternative 6 will require careful consideration since each phase includes major construction efforts which cannot interfere with the Irrigation District's ability to provide drinking and agricultural water to the surrounding communities.

Alternative 6 includes the construction of a new siphon to replace the existing Siphon. A new siphon would be constructed adjacent to the existing Siphon because the irrigation canal system can only be inoperable for short periods of time. The greatest challenge to the installation occurs where the new siphon intersects the Arroyo Colorado River. The river would have to be temporarily diverted (e.g., cofferdams, dewatering pumps, etc.) to allow for construction to be completed in an area adjacent to the existing Siphon. This diversion would require coordination with Hidalgo County and the International Boundary and Water Commission.

In addition to a new siphon, approximately 200 ft of the north end of the Main Canal and 400 ft of the south end of the Lower West Main Canal Unlined would need to be modified in order to connect to the new siphon. The new canal segments would contain concrete lining and transition to and from the siphon's entrance and exit, respectively. Alternative 6 would require the construction of a new flow control gate (i.e., weir) near the entrance of the Siphon in order to control water flow into the siphon because the existing weir would no longer be in alignment with the canal system. Once the new siphon's construction and canal modifications are completed, water can then be diverted into the new siphon and the existing Siphon would be dewatered and completely sealed (i.e., grouted) to prevent exposure to human and ecological receptors.

Utilizing an "iterative/flexible approach" is practical because of the long-term goal of overall risk reduction to human and ecological receptors that can be achieved by phasing the remedial action and the associated costs. This type of management approach is well-suited for application within the Five-Year Review process where the protectiveness of the remedial action and the progress towards achieving the Site's RAOs will be routinely evaluated by the EPA.

Compliance with the Statutory Preference for Treatment

The remedial action proposed under Alternative 6 does not meet CERCLA's statutory preference for treatment because the concentrations of PCBs in the sediment will not require treatment according to federal ARARs.

Statutory Five-Year Reviews

Alternative 6 will require statutory Five-Year Reviews since contaminants (i.e., PCBs) will be left on-Site above levels that permit unrestricted use and unlimited exposure. Although the EPA routinely evaluates the remedy after completion, a formal review will occur every five years in the form of a "Five-Year Review Report" where the EPA will evaluate the continuing protectiveness of the remedy for human health and the environment and the effectiveness of the ICs.

Compliance with PRGs and RAOs

The EPA's Preferred Alternative 6 includes the removal of the PCB-contaminated sediment, downstream of the Siphon's exit, which will reduce sediment PCB concentrations to below the PRG. Reducing the sediment PCB concentrations to below the PRG of 0.043 mg/kg will be protective of an adult and child recreational users from the consumption of fish. Reducing the sediment PCB concentrations to below the PRG will also be protective of ecological receptors.

REQUEST FOR PUBLIC COMMENTS

The EPA is requesting the public's comments on the EPA's Preferred Alternative 6 (Replace Siphon, Canal Dredging/Excavation, and Fish Removals) and the other alternatives described in this Proposed Plan. Oral or written public comments can be presented at the public meetings or can be submitted during the public comment period which starts on May 7, 2018, and ends on June 5, 2018. Any comments not provided to the EPA during the public meetings should be postmarked/dated no later than the end of the public comment period and, in order to be considered, should be mailed by postal mail or electronic mail to the EPA's Remedial Project Manager:

Rafael Casanova, P.G.
Remedial Project Manager (Environmental Scientist)
Bilingual: English/Spanish
United States Environmental Protection Agency (Region 6)
Superfund Division (6SF-RA)
1445 Ross Avenue, Suite 1200
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214-665-7437 or 800-533-3508 (toll free)
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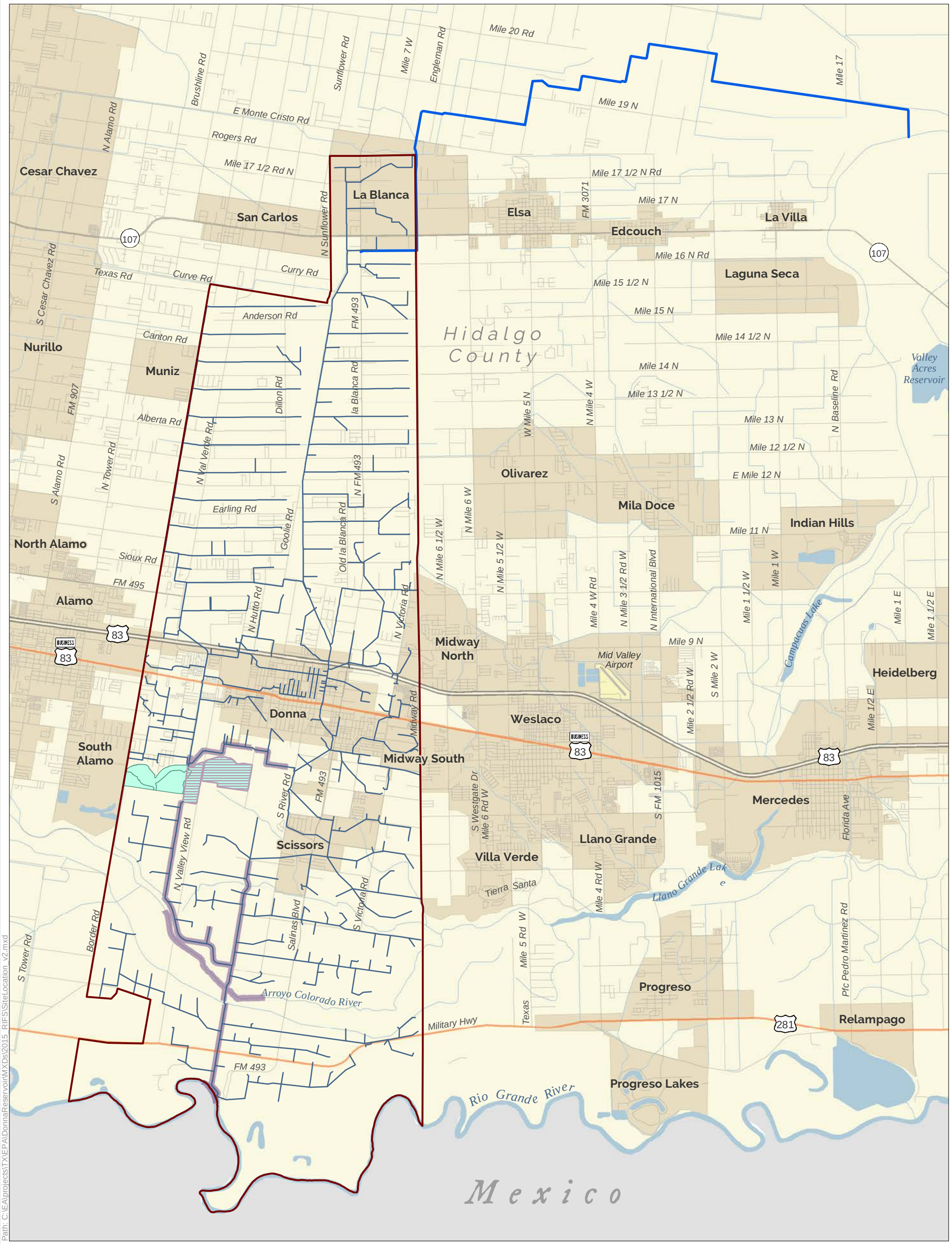
FIGURES



Legend

- Canal/River Area Under Investigation
- Portion of Donna Reservoir Under Investigation
- Irrigation Network
- Donna Irrigation District - Hidalgo County No. 1
- Donna Reservoir
- Donna Drain

Data Sources: Esri 2006, Texas A&M AgriLife Extension Service 2015, US Census Bureau 2016, USGS 2014

0 0.5 1 2
Miles

Remedial Investigation/Feasibility Study
Donna Reservoir and Canal System
Donna, Hidalgo County, Texas

Figure 1.
Site Location

June, 2017

Path: C:\EA\projects\TX\EPA\DonnaReservoir\MXDs\2015_RIFS\SiteLocation_v2.mxd

Alamo
Midway North
Donna
83
BUSINESS 83
Upper West Main Canal (UWMC)
City of Donna Water Treatment Plant
Reservoir No. 3 Second Enlargement (West) Reservoir (RN3W)
Cross Over Main Canal (COMC)
Midway South
South Alamo
Reservoir No. 3 Third Enlargement (East) Reservoir (RN3E)
Lower West Main Canal Lined (LWMCL)
Scissors
Lower East Main Canal (LEMC)
Weslaco
Lower West Main Canal Unlined (LWMCU)
Las Palomas Wildlife Management Area - Toarmina Unit
Las Palomas Wildlife Management Area - Baird Unit
Arroyo Colorado Tributary (ACT)
Siphon (SIP)
Arroyo Colorado River (ACR)
Main Canal (MC)
281
Rio Grande River (RGR)

Path: C:\EA\projects\TX\EPA\DonnaReservoir\MXDs\2015_RIFS\SiteLayout.mxd

Legend

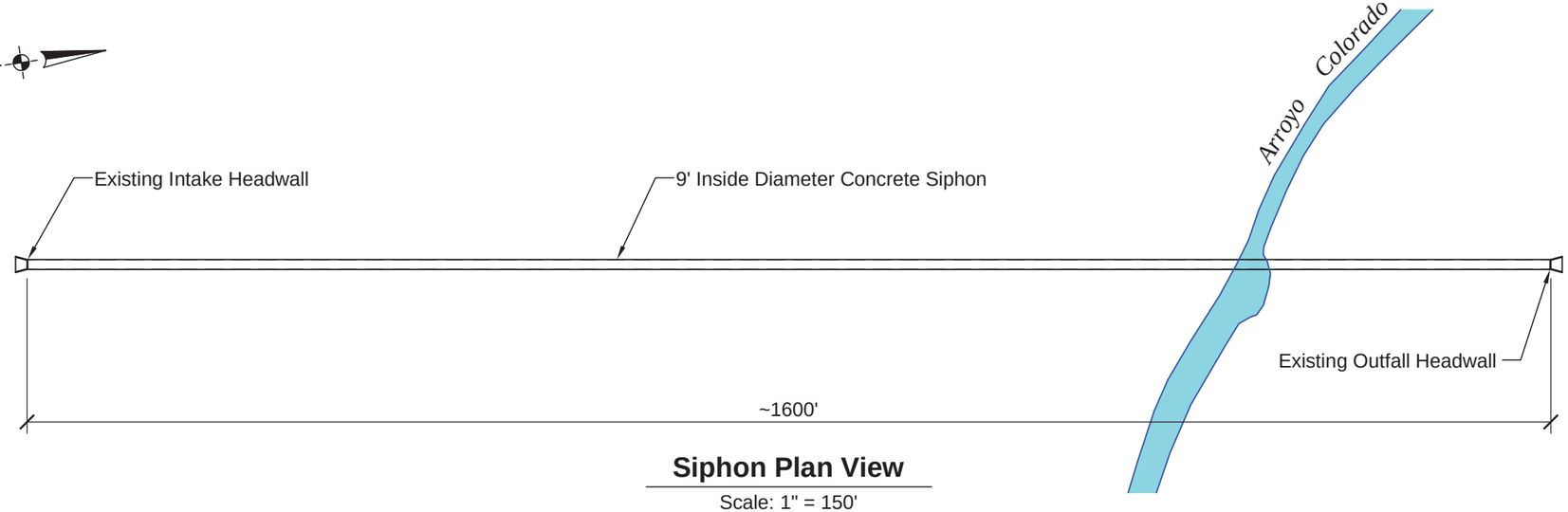
- Donna Irrigation District - Hidalgo County No. 1
- Donna Reservoir
- Upper West Main Canal
- Cross Over Main Canal
- Lower West Main Canal Lined
- Lower West Main Canal Unlined
- Lower East Main Canal
- Arroyo Colorado River
- Arroyo Colorado Tributary
- Siphon (Underground)
- Main Canal
- Rio Grande River

Data Sources: Esri 2006, Texas A&M AgriLife Extension Service 2015, USGS 2014

0 2,000 4,000
Feet

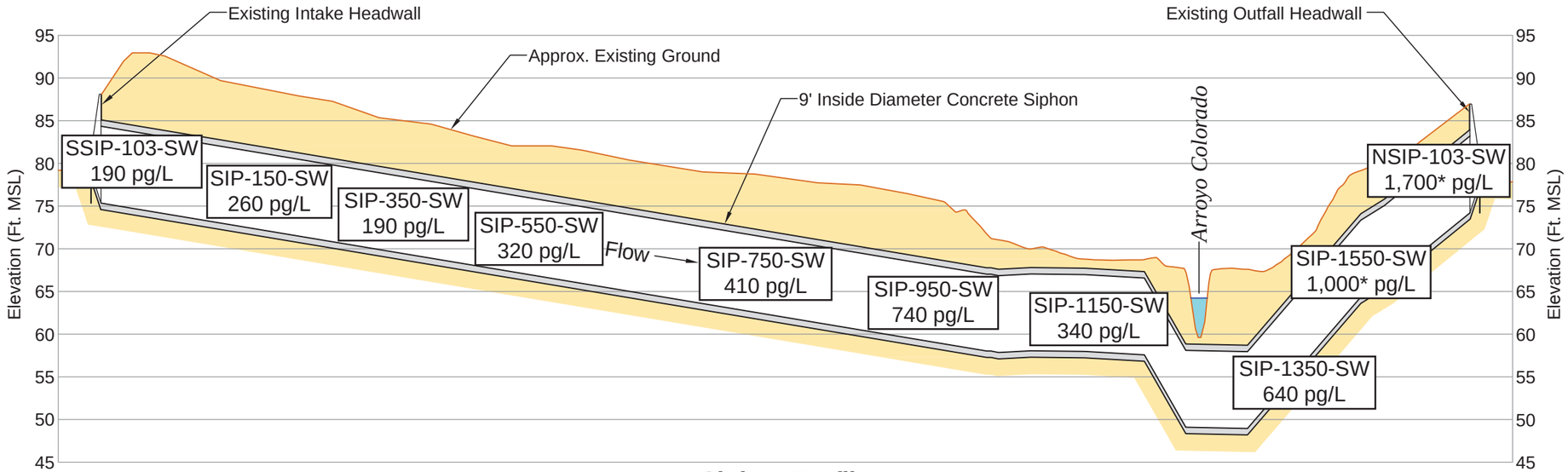
Remedial Investigation/Feasibility Study
Donna Reservoir and Canal System
Donna, Hidalgo County, Texas

Figure 2.
Site Layout



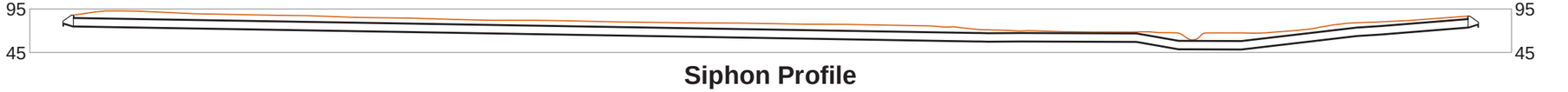
Siphon Plan View

Scale: 1" = 150'



Siphon Profile

Scale: 1" = 150' Horiz.; 1" = 15' Vert.
(10X Vertical Exaggeration)



Siphon Profile

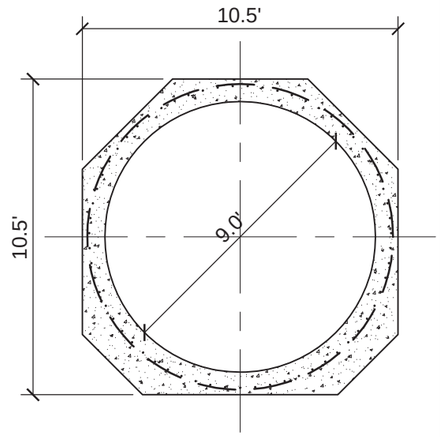
Scale: 1" = 150' Vert. & Horiz.
(No Vertical Exaggeration)

Note:

pg/L - picograms per liter

Sample locations should be considered approximate.

Flow measured at the Rio Grande Pumping Station was 40 cubic feet per second (cfs) during sampling, with the exception of samples marked with an asterisk (*). Asterisk marked results indicate the sample was collected during a flow of 100 cfs.



Typical Siphon Section

Scale: 1" = 5'

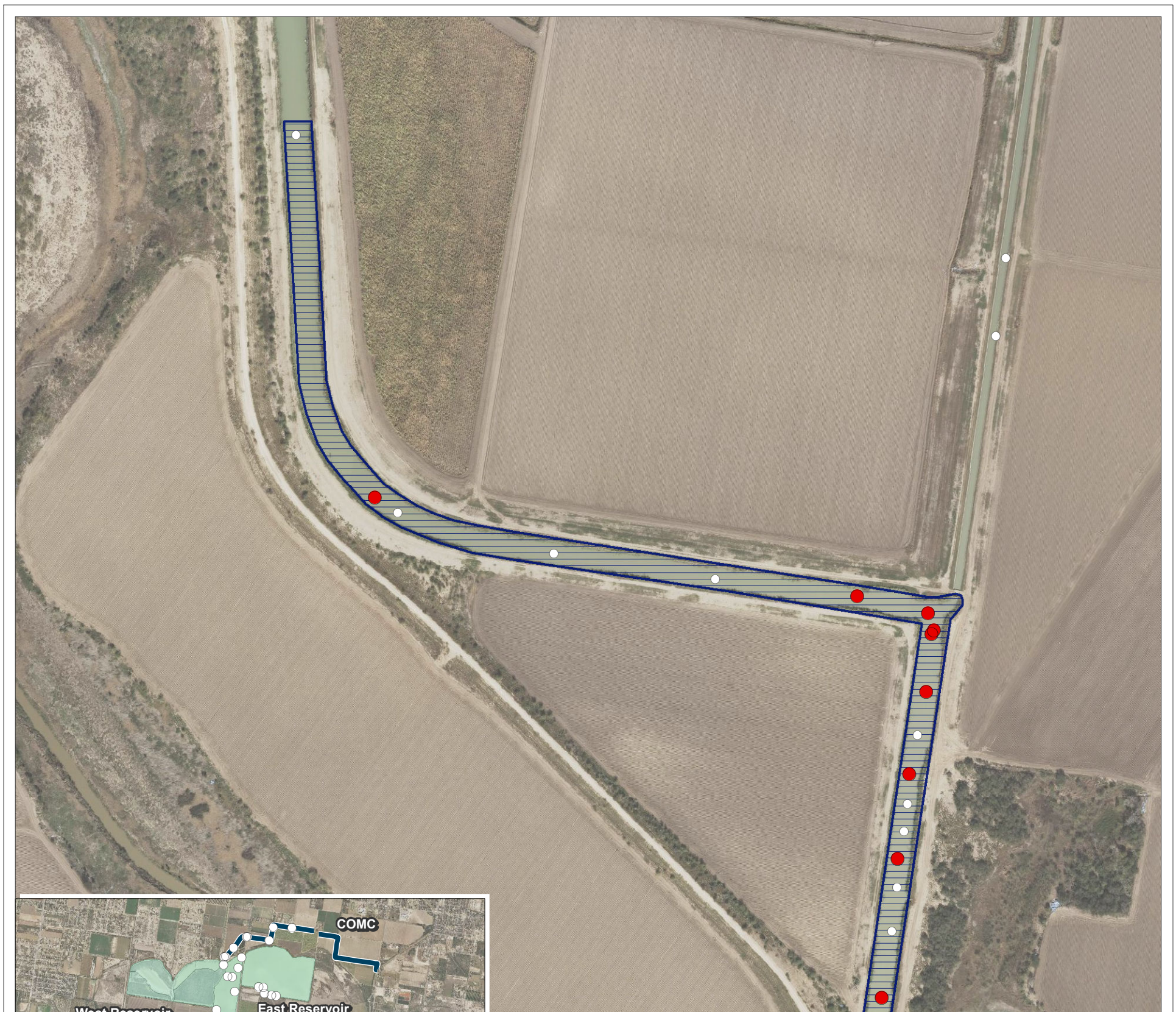
Note:
This figure has been adopted from:
URS Corporation. 2006. *Feasibility Study Report, Donna Reservoir and Canal System, Donna Hidalgo County, Texas.* Prepared for the Texas Commission on Environmental Quality. June.

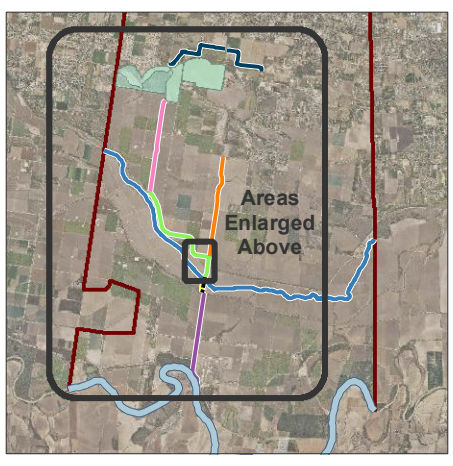
The siphon plan, profile, and sections shown on this drawing are based on historic siphon drawings from the report *Inverted Siphon Inspection by Remotely Operated Vehicle* (ASI Marine, 2001), and from construction plans entitled *Rehabilitation of Irrigation Facilities - First Lift Main Canal* prepared by Sigler, Clark & Associates, Weslaco, Texas and dated July 1961. The accuracy of the historic siphon drawings has not been verified and all information is approximate and should not be used for design purposes.

Remedial Investigation/Feasibility Study
Donna Reservoir and Canal System
Donna, Hidalgo County, Texas

Figure 3
Total Polychlorinated Biphenyl Congeners in Surface Water Samples Collected from Inside the Siphon

000102





Legend

- Cross Over Main Canal
- Lower West Main Canal Lined
- Lower West Main Canal Unlined
- Lower East Main Canal
- Arroyo Colorado River
- Arroyo Colorado Tributary
- Siphon (Underground)
- Main Canal
- Rio Grande River
- Remediation Area

Aroclor-1254, Aroclor-1260, or Total PCB Congener Concentrations in Sediment

- Does not Exceed Cleanup Goal <0.043 mg/kg
- Exceeds Cleanup Goal >0.043 mg/kg

mg/kg - Milligram(s) per kilogram
PCB - Polychlorinated Biphenyl

Data Sources: Esri 2006, Texas A&M AgriLife Extension Service 2015, USGS 2014

Remedial Investigation/Feasibility Study
Donna Reservoir and Canal System
Donna, Hidalgo County, Texas

Figure 4 .
Sediment Remediation Area

Path: \\lovetonfpl\TDev\GISData\projects\TX\EPA\DonnaReservoir\MXDs\2015_RIFS\SedRemArea_10_4.mxd

Modified
Lower West Main Canal
Unlined (LWMCU)

Arroyo Colorado River (ACR)

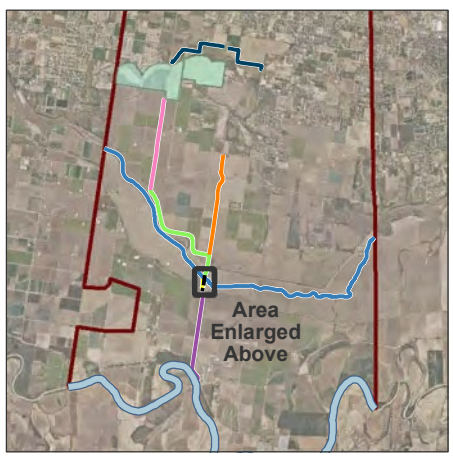
Existing Siphon

New Siphon

New Flow
Control Gate

Modified
Main Canal (MC)

Path: C:\EA\projects\TX\EPA\DonnaReservoir\MXDs\2015_RIFS\SiphonReplacement.mxd



Legend

- Lower West Main Canal Unlined (Modified)
- Main Canal (Modified)
- New Flow Control Gate
- New Siphon
- Existing Siphon

Data Sources: Esri 2006,
Texas A&M AgriLife Extension Service 2015, USGS 2014

0 100 200
Feet

Remedial Investigation/Feasibility Study
Donna Reservoir and Canal System
Donna, Hidalgo County, Texas

Figure 5.
Siphon Replacement

TABLES

Table 1
Human Health Risk Assessment Summary of Conclusions

Exposure Area	Receptor	Media	Chemical of Concern
Donna Reservoir and Canal System (Entire Site)	Adult Recreational User	All Fish	Aroclor-1254, Aroclor-1260, Total PCB Congeners
	Child Recreational User	All Fish	Aroclor-1254, Total PCB Congeners

Note:
Individual fish species (buffalo, carp, gar, catfish, and largemouth bass) were also evaluated; each fish species evaluated revealed potential human health concerns from Aroclor-1254.
PCB – Polychlorinated Biphenyl

Table 2
Potential Sediment Preliminary Remediation Goals Based on Fish Consumption

Chemical of Concern	Receptor	Potential Fish Remediation Goal (mg/kg)	Potential Sediment Remediation Goal (mg/kg)
Recreational Users			
Aroclor-1254 Aroclor-1260 Total PCB Congeners	Cancer Risk 10^{-4} (Adult Recreational)	0.41	0.043
Aroclor-1254 Aroclor-1260 Total PCB Congeners	Cancer Risk 10^{-5} (Adult Recreational)	0.041	0.004
Aroclor-1254	Non-Cancer HI=1 (Child Recreational)	0.031	0.003

Note:
The most conservative recreational user was used to calculate potential remediation goals.
HI – hazard index
mg/kg – milligrams per kilogram
PCB – Polychlorinated Biphenyl

Table 3
Ecological Risk Assessment Summary of Conclusions

Exposure Area	Receptor	Media	Chemical of Concern
LWMCU at Siphon's Exit	Small Piscivorous Birds	Fish Tissue	Total PCB Congeners
	Piscivorous Mammals	Fish Tissue	Total PCB Congeners, Total PCB Aroclors
	Benthic Invertebrates	Sediment	Aroclor-1254, Total PCB Congeners, Total PCB Aroclors
	Threatened and Endangered Species		
	Interior Least Tern	Fish Tissue	Aroclor-1254, Total PCB Congeners, Total PCB Aroclors
	Reddish Egret	Fish Tissue	Total PCB Congeners
	False Spike Mussel, Salina Mucket, and Texas Hornshell	Sediment	Aroclor-1242, Aroclor-1254, Aroclor-1260, Total PCB Congeners, Total PCB Aroclors
LWMCU Downstream of the Siphon	Small Piscivorous Birds	Fish Tissue	Total PCB Congeners
	Piscivorous Mammals	Fish Tissue	Total PCB Congeners, Total PCB Aroclors
	Threatened and Endangered Species		
	Interior Least Tern	Fish Tissue	Aroclor-1254, Total PCB Congeners, Total PCB Aroclors
	Reddish Egret	Fish Tissue	Total PCB Congeners
Reservoir	Threatened and Endangered Species		
	Coues' Rice Rat	Sediment via ingestion of benthos	Total PCB Congeners, Total PCB Aroclors

Note:
There is uncertainty associated with threatened and endangered species, for which little data is available regarding their actual presence on-site.
Risks from surface water exposure to ecological receptors were not identified in the ecological risk assessment.
LWMCU – Lower West Main Canal Unlined
PCB – Polychlorinated Biphenyl

Table 4
Potential Ecological Preliminary Remediation Goals

Chemical of Concern	Receptor	Potential Sediment Remediation Goal (mg/kg)	Note
Total PCBs	Small Piscivorous Birds General Population	0.483	NOAEL-LOAEL midpoint. Intended for application as a reach-wide average.
Total PCBs	Piscivorous Mammals General Population	0.071	NOAEL-LOAEL midpoint. Intended for application as a reach-wide average.
Total PCBs	Benthic Invertebrates General Population	0.68	Probable Effect Concentration. Intended for application on a point-by-point basis or as an average across small areas.
Total PCBs	Interior Least Tern	0.088	NOAEL. Intended for application on a point-by-point basis.
Total PCBs	Reddish Egret	0.088	NOAEL. Intended for application on a point-by-point basis.
Total PCBs	Coues' Rice Rat	0.023	NOAEL. Intended for application on a point-by-point basis, applicable to the reservoir only.
Total PCBs	False Spike Mussel, Salina Mucket, Texas Hornshell	0.06	Threshold Effects Concentration. Intended for application on a point-by-point basis or as an average across small areas.

Note:
LOAEL – lowest observed adverse effect level
mg/kg – milligrams per kilogram (dry weight)
NOAEL – no observed adverse effect level
Total PCBs – Either the sum of Polychlorinated Biphenyls (PCBs) as Aroclors or the sum of individual PCB Congeners.

Table 5
Cost for Each Alternative

Cost for Each Alternative	
Alternatives	***Costs***
Alternative 1: No Further Action	$0
Alternative 2: Limited Action	$1,640,000
Alternative 3: Slipline Siphon, Canal Dredging, and Fish Removals	$15,600,000
Alternative 6: Replace Siphon, Canal Dredging, and Fish Removals	$19,400,000

TABLE 6
TENTATIVE DETERMINATION OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND TO BE CONSIDERED ITEMS

ARAR	Citation (If Available)	Description	Applicability
Chemical Specific ARARs			
U.S. Food and Drug Administration Unavoidable Contaminants in Food for Human Consumption	21 Code of Federal Regulations Section 109.30(a)(7)	Establishes tolerances for unavoidable poisonous or deleterious substances. **The tolerance for total PCBs in the edible portion of fish and shellfish is 2 mg/kg.**	Relevant and appropriate.
Texas Risk Reduction Program Sediment Protective Concentration Levels	30 Texas Administrative Code 305.75	Establishes protective concentration levels for sediment in the state. Direct human contact sediment protective concentration levels, which address the ingestion/dermal contact with sediment pathways are available. **The sediment protective concentration level for PCBs is 2.33 mg/kg for non-carcinogenic risks and 5.48 mg/kg at a 10-5 carcinogenic risk level. However, the direct human contact protective concentration levels cannot be assumed to be protective of uptake to fish tissue and thus not protective of human exposures through the consumption of contaminated fish.**	To be considered.
Location Specific ARARs			
National Historical Preservation Act	16 United States Code Section 470 and 661 et seq. 36 Code of Federal Regulations Part 65 36 Code of Federal Regulations Part 800	Define procedures to preserve scientific, historical, and archeological data from potential destruction resulting from a change in the site terrain resulting from a federal construction project or federally licensed activity. If such artifacts are discovered during work at the site, work in the area will be stopped until data recovery and preservation activities are completed in accordance with the Act and regulations.	Applicable if scientific, historical, and archeological data is discovered during the project.
Executive Order 11988 Floodplains Management	40 Code of Federal Regulations Part 6 Appendix A 40 Code of Federal Regulations Section 6.302	Requires federal agencies to evaluate the potential affects of actions they may take in a floodplain to avoid adverse impacts in a floodplain.	Applicable because the site lies within a 100-year floodplain.
Endangered Species Act of 1973	16 United States Code Section 1531 et seq. 50 Code of Federal Regulations Sections 222-228	Federal agencies must confirm any action that is federally authorized, funded, or implemented by the agency is not probable to adversely affect the continued existence of any threatened or endangered species. The agency must ensure that the critical habitat is not destroyed or negatively modified.	Applicable if threatened or endangered species are found onsite.
Migratory Bird Treaty Act	16 United States Code Section 703 et seq.	Federal responsibility for the protection of the international migratory bird resource and requires continued consultation with the U.S. Fish and Wildlife Service during remedial design and remedial action activities to ensure that the cleanup of the site does not unnecessarily impact migratory birds. Specific mitigative measures may be identified for compliance with this requirement.	Applicable if the remedy may impact migratory birds.
International Boundary and Water Commission United States and Mexico	United States Section	Approval must be received from the U.S. International Boundary and Water Commission prior to commencement of construction of any facility which passes over, under or within the floodplain of the international reaches of the Rio Grande and Colorado Rivers. The U.S. International Boundary and Water Commission retains right of approval on all improvements which are to pass over, under or through the walls, levees, improved channel or floodways of U.S. International Boundary and Water Commission Flood Control Projects, including the Rio Grande.	Applicable because the site lies within the boundaries of the International Boundary and Water Commission.
Texas Parks and Wildlife Department	31 Texas Administrative Code Sections 65.171-65.176	Requirements for any species of wildlife listed in Texas as threatened or endangered, living or dead, including parts.	Applicable if threatened or endangered species are found onsite.

TABLE 6
TENTATIVE DETERMINATION OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND TO BE CONSIDERED ITEMS

ARAR	Citation (If Available)	Description	Applicability
Action Specific ARARs			
Disposal			
Toxic Substances Control Act	40 Code of Federal Regulations 761	Disposal of polychlorinated biphenyls.	Applicable if disposal of media containing polychlorinated biphenyls is required.
Resource Conservation and Recovery Act	40 Code of Federal Regulations 260, 261, 262, 263, 264, 268, 270, 271, 272, 370	General hazardous waste management including identification, generation, transportation, disposal of waste; permitting, monitoring, and reporting requirements; authorizations and recognition of state hazardous waste programs; chemical release reporting.	Applicable if transportation and disposal of hazardous waste as defined by Resource Conservation and Recovery Act (listed or characteristic) is required.
Procedures of Planning and Implementing Off-site Response Actions	40 Code of Federal Regulations 300.400	Hazardous waste generated from CERCLA cleanups must go to RCRA permitted treatment, storage, and disposal facilities that are in compliance with RCRA and state rules, and that do not have releases to the environment.	Applicable if hazardous waste is generated during remedial activities.
Waste Classification	30 Texas Administrative Code Section 335.505 30 Texas Administrative Code Section 335.508	Provides procedure for implementation of Texas waste notification system and establishes standards for classification of industrial solid waste managed in Texas, including Class 1, Class 2, and Class 3 wastes.	Applicable if waste is generated during remedial activities.
Remediation Activities			
Permits and Enforcement Comprehensive Environmental Response, Compensation, and Liability Act	CERCLA 121e	This section of CERCLA states that "no federal, state, or local permit shall be required for any portion of a CERCLA remedial action that is conducted on the site of the facility being remediated." This includes exemption from the RCRA permitting process. Note that the substantive requirements of the regulations must still be met.	Applicable if a remedial action is conducted at the site, because the site is subject to CERCLA.
Clean Water Act	33 United States Code Section 1251 et seq. Section 404 National Pollution Discharge Elimination System	Dredging, backfill, or infill materials or activities within waters and wetlands of the United States	Applicable if remedial activities impact waters of the United States.
Spill Prevention and Control	30 Texas Administrative Code Chapter 327	Defines reportable quantities in the event of a spill or release to environment, notification requirements, and actions required.	Applicable if a release or spill to the environment occurs during remedial activities.
Worker Health and Safety For Remedial Actions	40 Code of Federal Regulations 300.150 29 Code of Federal Regulations 1910.120	Requires assurance of the health and safety of workers during the remedial action.	Applicable if remedial activities are conducted at the site.
Fish and Wildlife Coordination Act	16 United States Code Section 662	When modifications to a stream or other water body are proposed or approved by any United States agency, such agency shall review with the U.S. Fish and Wildlife Service, Department of the Interior, and with the head of the agency overseeing the wildlife resources of the site.	Applicable if remedial activities occur in streams or the canal system.
Water Discharge			
National Pollutant Discharge Elimination System	40 Code of Federal Regulations 122 40 Code of Federal Regulations 125	Provides conditions that must be incorporated into National Pollutant Discharge Elimination System permits. Applicable to discharge of storm water from the site.	Applicable if remedial activities are conducted at the site.
Texas Pollutant Discharge Elimination System - Construction General Permit	TXR150000	General permit to discharge water from construction activities.	Applicable if construction activities are performed during the remedial action.

Notes:
ARAR - Applicable or relevant and appropriate requirements
CERCLA - Comprehensive Environmental Response, Compensation and Liabilities Act
PCB - Polychlorinated biphenyls
RCRA - Resource Conservation and Recovery Act
TBC - To be considered
µg/L - micrograms per liter
mg/kg - milligrams per kilogram