

**ASSESSMENT OF POTENTIAL IMPACTS TO THE UNITED STATES
OF THE CEGIR HAZARDOUS WASTE LANDFILL
IN SONORA, MEXICO**

FINAL

Prepared for:

**United States Environmental Protection Agency
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TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	BACKGROUND	1
2.1	CEGIR Project Information.....	1
2.2	Regulatory Status.....	3
2.3	Information Considered.....	5
3.0	ASSESSMENT OF POTENTIAL IMPACTS	5
3.1	Surface Water Contamination	6
3.2	Groundwater Contamination	7
3.3	Contaminant Transport by Air.....	13
3.4	Comparison to U.S. Standards.....	16
3.5	Transportation of Hazardous Waste	17
3.6	Access of Birds to Landfill Ponds	17
3.7	Cultural and Archeological Impacts	18
4.0	AREAS OF INSUFFICIENT INFORMATION	18
5.0	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	20

APPENDIX A	Comments from Other Entities on the Proposed CEGIR Project
APPENDIX B	Summary of Documents Reviewed

Figures

- Figure 1. Location of CEGIR Hazardous Waste Landfill
- Figure 2. Surface Water Flow Direction
- Figure 3. GoogleEarth Image of Mountain Ranges and Distance to U.S.
- Figure 4a. Geologic Map of the Vicinity of the CEGIR Landfill Site
- Figure 4b. Legend to Accompany the Geologic Map of the Vicinity of the CEGIR Landfill Site
- Figure 5. Typical Wind Rose Diagrams for Casa Grande and Maricopa, Arizona

ACRONYMS

ADEQ	Arizona Department of Environmental Quality
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
LAU	Licencia Ambiental Única (Exclusive Environmental License)
LGEEPA	Ley General del Equilibrio Ecológico y la Protección al Ambiente (LGEEPA) (General Law of Ecological Balance and Environmental Protection)
OSHA	Occupational Safety and Health Act
PCB	Polychlorinated biphenyls
PROFEPA	Procuraduría Federal de Protección Ambiental (Federal Environmental Enforcement Agency)
RCRA	Resource Conservation and Recovery Act
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales (Secretary for Environment and Natural Resources)

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) contracted Booz Allen Hamilton to assess the potential impacts to the United States of a planned hazardous waste landfill to be constructed in Mexico, henceforth the CEGIR Project. The need for additional hazardous waste management capacity in Mexico has been expressed for many years by Mexico, and it is an explicit Objective of the Border 2012 Program. While increasing institutional and infrastructure capacity to reduce land contamination is a goal of the Border 2012 Program, both countries recognize the importance of constructing any new waste management facility in an environmentally safe manner. This document, prepared in collaboration with the EPA, provides an assessment of potential concerns and explains the limitations associated with data availability on this project. The key issue addressed in this assessment is whether there are any potential impacts to the United States and whether these potential impacts are adequately mitigated.

Both Mexico and the United States have agreed through a Consultative Mechanism (<http://www.epa.gov/border2012/waste/conmech.pdf>), created by the U.S.-Mexico Hazardous and Solid Waste Workgroup under the authority of the La Paz Agreement, to exchange information on new and existing facilities for the management of hazardous and radioactive wastes within 100 km of the U.S.-Mexico border that could impact the other country. The Consultative Mechanism recognizes the sovereignty of each country to make siting and permitting decisions on proposed hazardous waste facilities. Mexico's Secretaría de Medio Ambiente y Recursos Naturales (Secretary for Environment and Natural Resources), henceforth abbreviated as SEMARNAT, was provided a preliminary draft of this report for review, and SEMARNAT provided its comments to EPA in a telephone conversation on June 13, 2006 and responded to questions about the permit process posed by EPA on September 8, 2006. Where relevant, those comments have been incorporated into this document.

EPA shared a draft assessment report with the Arizona Department of Environmental Quality (ADEQ) and the Tohono O'odham Nation to solicit and capture their respective comments in writing (comments are provided in Appendix A). EPA is actively engaged in communications to encourage SEMARNAT to work directly with the Tohono O'odham Nation to address their concerns and will also continue to facilitate communication between the Tohono O'odham Nation, ADEQ, and SEMARNAT.

2.0 BACKGROUND

A description about the proposed project, regulatory status, and information considered to prepare this assessment is discussed below.

2.1 CEGIR Project Description

The *Manifestación de Impacto Ambiental, Modalidad Regional y el Estudio de Riesgo Ambiental (Environmental Impact Statement, Regional and Environmental Risk Study)*, henceforth Reference 1, describes the hazardous waste landfill planned for construction in the State of Sonora, Mexico, approximately 41 kilometers (km) or 25 miles south of the U.S.-Mexico border.

The undertaking had been designated “Servicios Ambientales La Choya (La Choya Environmental Services),” and is now referred to as the CEGIR Project. Figure 1 (from <http://www.maps-of-mexico.com/sonora-state-mexico/sonora-state-mexico-map-main.shtml>) shows the approximate location of the approved site of the landfill (designated by a star), the Gulf of California (Golfo de Cortés) in the lower left corner, and the State of Arizona in the upper right corner. The project is located just southeast of Villa Hermosa, off of Federal Highway 2.

Reference 1 also provides specific information about the types of waste to be received, projected capacity, and proposed engineering and operational controls. A summary of the most relevant features of the facility follows below:

- Size of the landfill at full proposed capacity
 - Total project area = 100 hectares (ha) = 1,000,000 sq. meters = 1 sq. km, = 247.1 acres (1 hectare = 10,000 sq. meters = 0.01 sq. km = 2.471 acres)
 - Surface area of waste disposal area = 514,920 sq. meters
 - Volume of waste disposal area = 3,381,984 cubic meters divided into eight cells
- Size (acreage and volume) and purpose of the holding ponds
 - Leachate collection pond (2,400 sq. meters); evaporation of volatile components of leachate
 - Storm water pond (2,400 sq. meters); evaporation of collected storm water
- Types of wastes to be received
 - Materials classified as hazardous wastes excluding the following:
 - Radioactive materials
 - Explosives, except dilute solutions of picric acid
 - Aliphatic peroxides (e.g., ethyl, isopropyl, n-butyl ether)
 - Compressed gases (including aerosols)
 - Wastes containing polychlorinated biphenyl (PCB) concentrations greater than 50 parts per million
 - Dioxins
 - Infectious biological waste
- Anticipated quantities of wastes to be received and estimated project life
 - 45,000 metric tons per year
 - 50 years
- Proposed engineering and operations controls
 - Double liner (high-density polyethylene) with a layer of clay in the middle
 - Leachate collection and leak detection systems (see section 3.2 for suggested modifications to the current design)
 - Cap consisting of compacted soils (60 cm thick) on each side of a 40-mil geomembrane liner
 - Waste conditioning and stabilization.

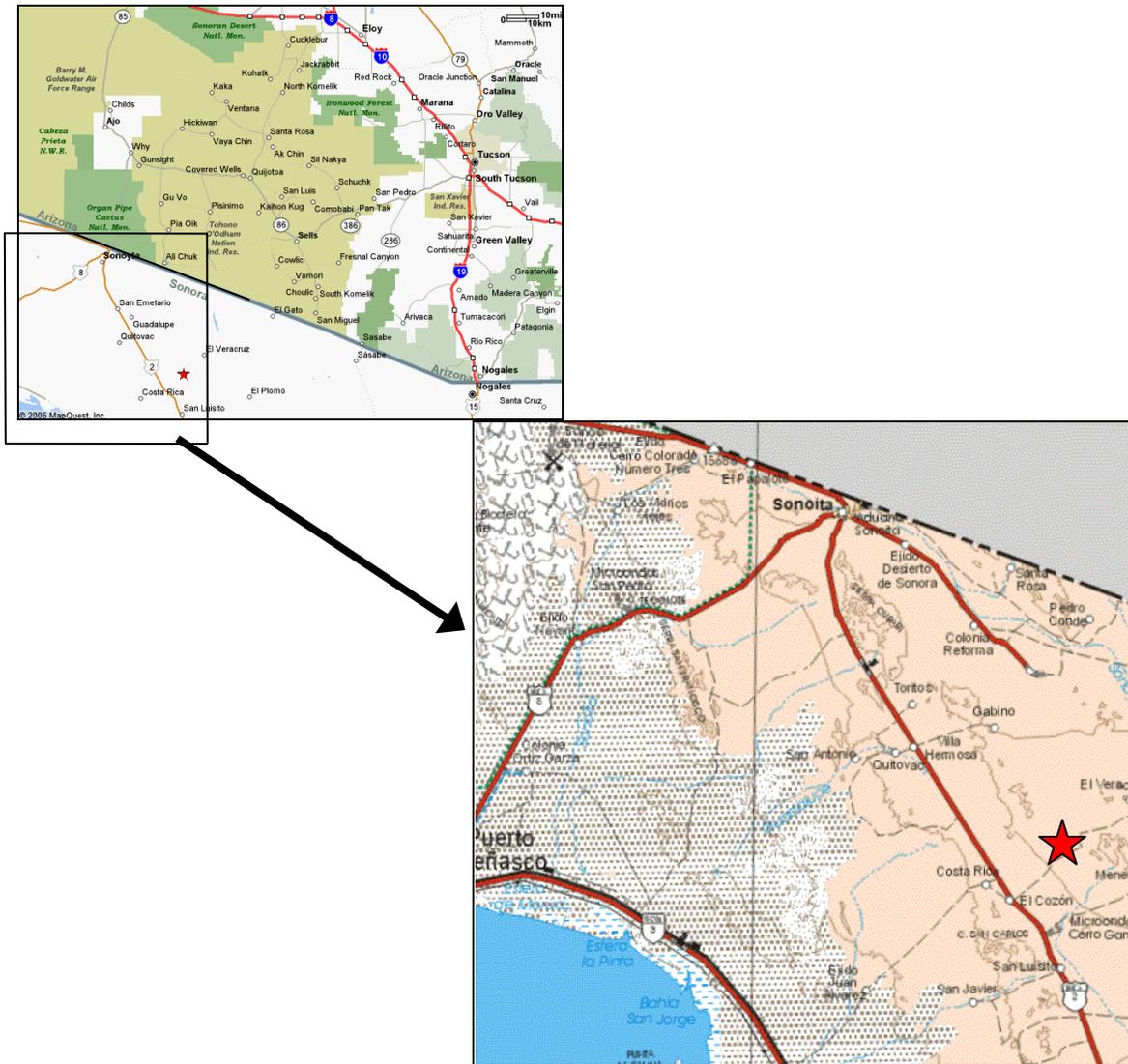


Figure 1. Location of CEGIR Hazardous Waste Landfill

2.2 Regulatory Status

The CEGIR Project is a private sector initiative for the construction, operation, maintenance, and closure of solid and hazardous waste treatment and disposal facilities in Mexico. The hazardous waste treatment and disposal facility planned for Sonora would operate under Mexican laws and regulations, licensed and permitted by the Mexican environmental agency, SEMARNAT. Mexican standards for siting, design, construction, and operation of hazardous waste facilities are based on:

- Ley General del Equilibrio Ecológico y la Protección al Ambiente (LGEEPA) (General Law of Ecological Balance and Environmental Protection)

- Ley General para la Prevención y Gestión Integral de los Residuos (General Law for the Prevention and Integrated Management of Waste)
- Reglamento de la LGEEPA en Materia de Residuos Peligrosos (LGEEPA Regulation Regarding Hazardous Waste Matters)
- NOM-055-SEMARNAT-1993: Standards regarding hazardous waste landfill siting
- NOM-056-SEMARNAT-1993: Standards regarding the design and construction of hazardous waste landfill facilities
- NOM-057-SEMARNAT-1993: Standards regarding the design, construction, and operation of hazardous waste landfill cells
- NOM-058-SEMARNAT-1993: Standards regarding the operation of hazardous waste landfill facilities.

SEMARNAT's Subsecretaría de Gestión para la Protección Ambiental, Dirección General de Gestión Integral de Materiales y Actividades Riesgosas (Subsecretary for Environmental Protection Management, Integrated Management of Hazardous Materials and Activities Division) evaluated the CEGIR Project application against the above-referenced standards. On October 13, 2005, SEMARNAT issued a permit (Autorización para el Confinamiento de Residuos Peligrosos (Authorization for a Hazardous Waste Landfill)), Autorización No. 26-48-PS-VIII-01-2005, based on their determination that the CEGIR Project met appropriate siting and design criteria.

The most recent information on the regulatory status of the CEGIR project was provided by SEMARNAT in October 2006, in response to questions from EPA made September 8, 2006 and comments from the Tohono O'odham Nation (see Appendix A). SEMARNAT clarified that while they issued a permit (Permit No. 26-48-PS-VIII-01-2005) for the construction and operation of the proposed CEGIR project, the project cannot proceed until it obtains a land use and a construction license from the local municipality. SEMARNAT further clarified that the permit is valid for five years and that an extension would be possible, if after five years of operations, Mexico's Federal Environmental Enforcement Agency (Procuraduría Federal de Protección Ambiental, or PROFEPA) makes a determination that a permit extension is warranted. In response to EPA's question on whether there would be any further opportunities for public comment, SEMARNAT responded that their laws provide for a defined comment period at the initiation of a project and that period has already concluded.

Procedurally, it is still unclear how SEMARNAT would incorporate any recommended corrective actions, deficiencies, or additions to the existing facility permit. EPA understands that SEMARNAT would issue an "amendment" to the permit, but SEMARNAT has not taken any action because the local licenses have not been approved. Recent elections in Mexico resulted in a new President of the Municipality of Plutarco Elias Calles. The previous municipal government had denied the permits; however, the new government may reconsider and either approve or again deny the permits.

2.3 Information Considered

This assessment of potential impacts to the United States from the CEGIR project was based primarily on the following documents:¹

- Manifestación de Impacto Ambiental, Modalidad Regional y el Estudio de Riesgo Ambiental (Environmental Impact Statement, Regional and Environmental Risk Study), also referred to as Reference 1
- SEMARNAT's Evaluation of "Manifestación de Impacto Ambiental (Environmental Impact Statement)"
- Licencia Ambiental Única (Exclusive Environmental License) No. LAU-09/00664-2005
- Autorización para el Confinamiento de Residuos Peligrosos (Authorization for a Hazardous Waste Landfill).

In addition, the assessment considered comments from the Tohono O'odham Nation, as well as comments resulting from Border 2012 meetings and the public meeting held in Hermosillo, Sonora, on April 11, 2006, to address any additional concerns with the project.

Booz Allen Hamilton reserves the right to alter its findings, conclusions, and opinions in part or in whole once additional or revised data and information are received.

3.0 ASSESSMENT OF POTENTIAL IMPACTS

As directed by EPA, the focus of this initial assessment is on the potential impact of the CEGIR Project to the United States. The proposed facility is about 41 km (25.4 miles) from the United States border. The figures shown in Table 1 indicate the straight line distances from the proposed landfill to various locations of interest.

¹ A more detailed description of the documents referenced in Section 2.3 can be found in Appendix B of this assessment.

TABLE 1
STRAIGHT-LINE DISTANCES FROM THE
CEGIR PROJECT TO VARIOUS LOCATIONS

Location	Distance	
	(mi)	(km)
U.S. Border by Road/Hwy	42.4	68.7
Shortest Distance to Border	25.4	41.1
Distance to Quitovac	12.9	20.9
Nearest U.S. Hwy	27.4	44.4
Lukeville	35.8	58.0
Sonoyta	34.4	55.7
Tucson	92.3	149.5

This assessment of potential impacts to the United States is based, in part, on general scenarios of surface water, groundwater, and atmospheric contamination that could result from unspecified accidental or unknown releases of hazardous materials from the CEGIR site or in transit to the CEGIR site. Neither the quantities nor types of hazardous materials are considered, and the physical and chemical properties of the materials are assumed to promote their mobility. In other words, worst case scenarios are being assumed in this initial assessment of potential impacts.

3.1 Surface Water Contamination

It is unlikely the project will impact surface waters of the United States because the general direction of surface water flow in the vicinity of the proposed landfill is to the southwest, through a gap in the mountain ranges and toward the Gulf of California.

Figure 2, an EPA-annotated GoogleEarth image, shows the topography of the area, the proposed location of the landfill, and the flow of surface water in both the vicinity of the proposed landfill (blue dashed lines) and Quitovac (yellow dashed lines). GoogleEarth (<http://earth.google.com/>) is a free satellite image program which allows viewers to access high-quality satellite imagery. The annotated surface water flow lines (blue and yellow dashed lines) are based on the dendritic ("tree-like") drainage patterns evident in the satellite image, which clearly show surface water flow paths in the vicinity of the landfill extending from Sierra la Espuma to the southwest and through a gap in the mountain ranges.

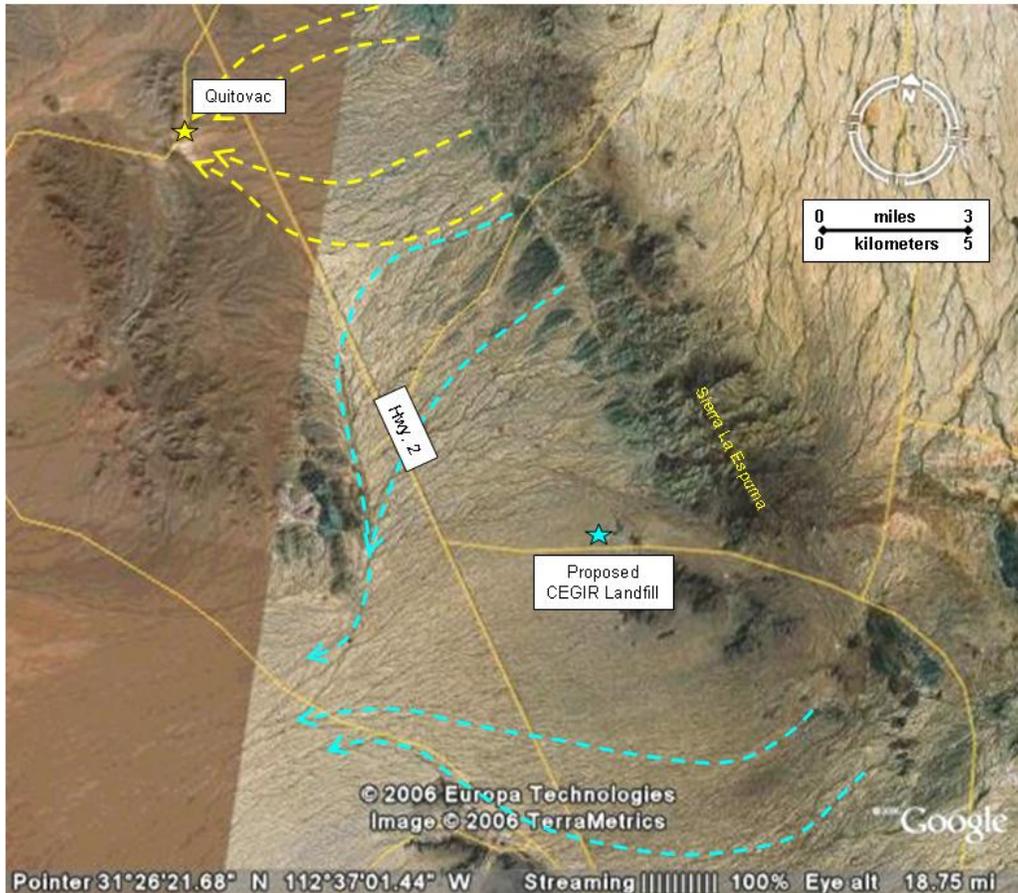


Figure 2. Surface Water Flow Direction

The project proponent performed a hydrological study, which is included in an appendix of Reference 1. The study concentrated on the surface features near the landfill site and concluded that surface water flow will generally be toward the southwest. Based on the information provided, it appears that surface waters of the United States will not be impacted.

3.2 Groundwater Contamination

The risk of contaminated groundwater from the facility reaching the United States is extremely low. The local geology, distance from the United States, lack of precipitation and proposed engineering controls for the landfill all contribute to reduce the risk that groundwater contamination could ever reach the United States.

Reference 1 states numerous times, in the text and appendices, that there is no groundwater beneath the site of the landfill and that, because of this, the landfill should not pose a contamination risk to groundwater. Anexo [Appendix] 10 of Reference 1 contains the summary of a study at the proposed landfill site where electrical resistivity data were collected and interpreted to describe the corresponding geophysical characteristics of the site. The study indicates that three distinct layers pervade the site. The two top layers are highly porous and

consist primarily of sand and gravel with interspersed lenses of caliche (caliche is a hard mineral deposit which forms in arid and semi-arid environments). The bottom layer is the underlying granitic bedrock for the area. The study reports that no groundwater was indicated in the upper 300 meters of the formation. The results of this study were used to justify the siting of the CEGIR project without the need for drilling investigatory wells.

By evaluating the geological and hydrogeological information at hand, we believe it is most likely that groundwater, if present, would flow to the southwest. Groundwater typically follows the path of surface water, which as illustrated in the previous figure, flows southwest in the vicinity of the landfill. However, unless monitoring wells are installed, the presence and flow of groundwater in the immediate vicinity of the landfill cannot be fully determined. SEMARNAT has indicated that the project sponsor will be asked to install groundwater wells at the site to verify the depth to groundwater and to serve as monitoring wells for the site.²

Geology in the area of the proposed landfill is in the Basin and Range province, which encompasses parts of California, Arizona, New Mexico, Utah, Nevada and northern Mexico. The characteristic steep mountain ranges and intervening alluvial basins are the result of eons of tectonic activity. As the mountains are continuously uplifted, they are also continuously eroding, forming characteristic coalescing alluvial fans which fill the valleys ("Basins" of Basin and Range). In the vicinity of the site, the basins and ranges are roughly parallel structures oriented to the northwest. In typical Basin and Range geology, groundwater occurs within the layers of sand and gravel which fill up the valleys. The hard rock mountain ranges usually contain relatively little groundwater and are themselves barriers to groundwater flow (see Figure 3).

² EPA phone conversation with SEMARNAT, June 13, 2006.

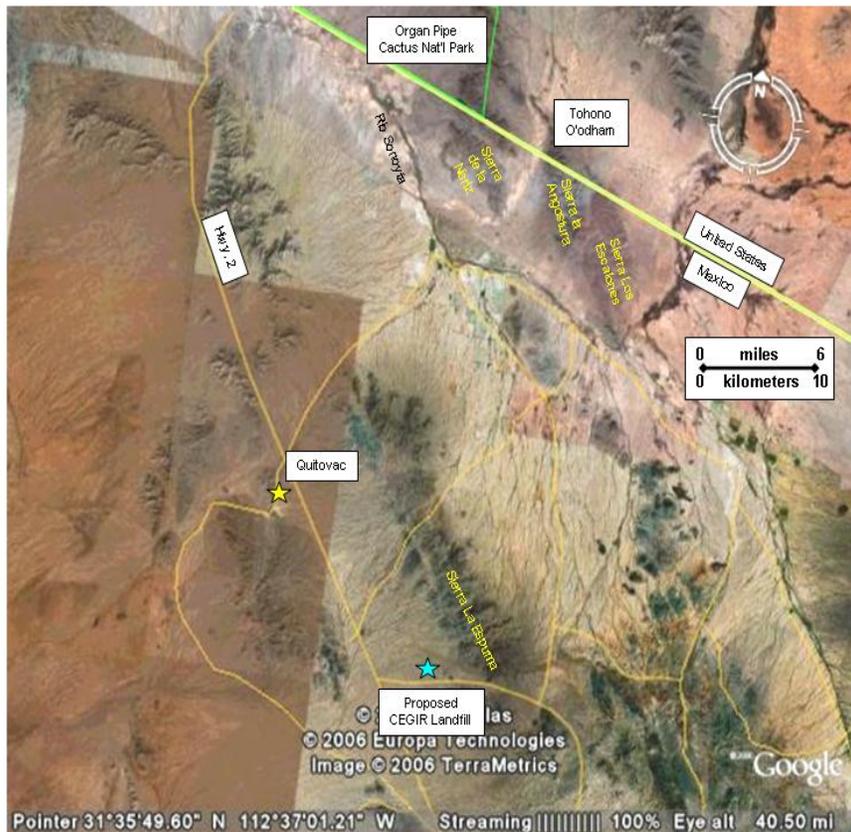


Figure 3. GoogleEarth Image of Mountain Ranges and Distance to U.S.

The geologic map of the area, originally published at 1:250,000 scale by the Servicio Geológico Mexicano (Mexican Geological Service), also suggests that groundwater, if present, would flow to the southwest. The map can be downloaded as a *.pdf file from the following Web site: http://www.coremisgm.gob.mx/productos/cartas/cartas250/geologia/metadatos/10_H12-1GM_META.htm. Figure 4, labeled Zona Mineralizada – La Choya (La Choya Mineralized Zone) is a portion of the referenced geologic map.

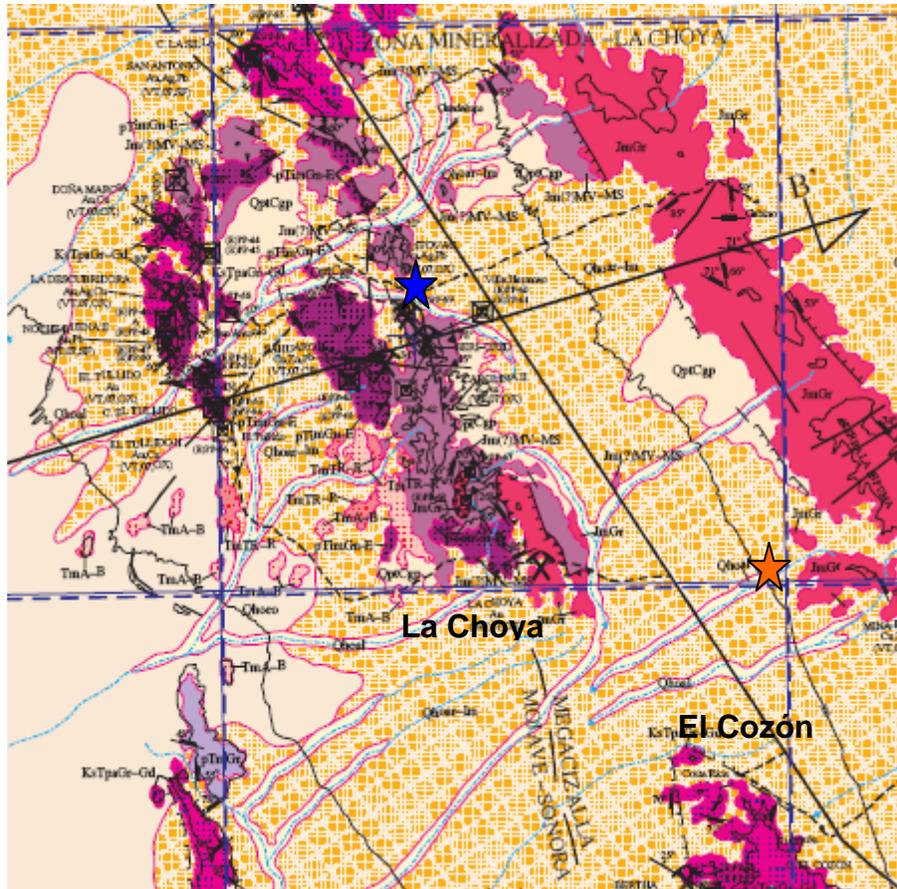


Figure 4a. Geologic Map of the Vicinity of the CEGIR Landfill Site.

The orange star shows the location of the proposed landfill; the blue star indicates the location of Quitovac. The orange and light tan colors indicate the location of alluvial deposits, through which groundwater can flow. The red and purple colored areas indicate the location of low permeability rock. Based on the surface and geologic features shown on Figures 3 and 4a, groundwater would be expected to flow southwest through the “gap” filled by alluvium between the mountain ranges of La Choya and El Cozón (see lower right quadrant of Figure 4a).

La Choya gold mine is located due west of the site, at a distance of about 8 km. In addition, the Mina de Diaz copper and zinc mine is located due east of the site, also at a distance of about 8 km. Both La Choya and Mina de Diaz mines are located in bedrock, so that if groundwater were present at these sites, it would be in the form of a fractured-bedrock aquifer, which could potentially be hydraulically connected with the alluvial aquifer of the basin where the CEGIR site is located. Data from groundwater wells or exploration drilling sites at these mines could be evaluated to obtain further insight into groundwater flow in the area.

Figure 4b.

Legend to Accompany the Geologic Map of the Vicinity of the CEGIR Landfill Site. Upper case indicates periods of geologic time; lower case indicates sediment or rock types; boxed abbreviations correspond to the labels used in Figure 4a.

CUATERNARIO

Qhoal	ALUVIÓN
Qholi	LITORAL
Qhola	LACUSTRE
Qhopa	PALUSTRE
Qho-ar-lm	ARENA - LIMO
Qhoeo	EÓLICO
QptCgp	CONGLOMERADO POLIMÍCTICO

TERCIARIO NEÓGENO

TplQpt B-BvB	BASALTO - BRECHA BASÁLTICA
TmA-B	ANDESITA - BASALTO
Tm TR-R	TOBA RIOLÍTICA - RIOLITA

CRETÁCICO SUPERIOR

KsA-TA	ANDESITA - TOBA ANDESÍTICA
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JURÁSICO MEDIO

Jm(?) MV-MS	METAVOLCÁNICA - METASEDIMENTARIA
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CÁMBRICO INFERIOR

€im Cz-Ar	CALIZA - ARENISCA
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PROTEROZOICO INFERIOR

pTim Gn-E	GNEIS - ESQUISTO
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ROCAS ÍGNEAS INTRUSIVAS

TeGr	GRANITO
KsTpa Gr-Gd	GRANITO - GRANODIORITA
JmGr	GRANITO
TRsGr	GRANITO
pTmGr	GRANITO

English Translation

QUATERNARY

Qhoal	Alluvium
Qholi	Shoreline deposits
Qhola	Lacustrine deposits
Qhopa	Marsh deposits
Qho-ar-lm	Sand-silt
Qhoeo	Eolian deposits
QptCgp	Polimictic conglomerate

TERTIARY NEOGENE

TplQpt B-BvB	Basalt - basaltic Breccia
TmA-B	Andesite-basalt
Tm TR-R	Rhyolitic tuff - Rhyolite

UPPER CRETACEOUS

KsA-TA	Andesite - andesitic tuff
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MIDDLE JURASSIC

Jm(?) MV-MS	Metavolcanic - metasedimentary
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LOWER CAMBRIAN

Cim Cz-Ar	Limestone - Sandstone
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LOWER PROTEROZOIC

pTim Gn-E	Gneiss - Schist
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IGNEOUS INTRUSIVE ROCKS

TeGr	Granite
KsTpa Gr-Gd	Granite - granodiorite
JmGr	Granite
TRsGr	Granite
pTmGr	Granite

The straight-line distance (i.e., to the northeast) from the proposed project to the United States border is approximately 25 miles. However, in that 25 miles are two mountain ranges. The mountain ranges serve as a natural barrier to groundwater so that even if we were wrong in our assumption that groundwater flows to the southwest and groundwater flowed to the north, the water would have to travel northwest, along the axis of the valleys, which is a distance of approximately 34 miles. This is likely to be the minimum distance that contamination from the facility would need to migrate to reach the United States. This minimum distance assumes that groundwater in the vicinity of the site flows and that the 34 miles of basins are connected hydrologically.

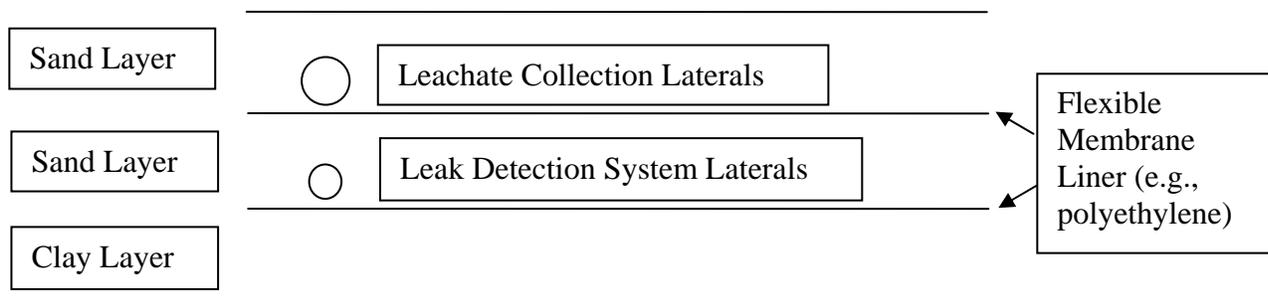
The amount of precipitation (rainfall) is key to any interpretation of local and downgradient groundwater risks from landfills, as the hydraulic loading from precipitation serves to leach contaminants downward toward groundwater. Local precipitation rates are likely to be relatively low, based on the physiographic environment (the Sonora Desert) and the presence of caliche layers in the subsurface. Without the driving force provided by precipitation, contaminant migration to groundwater is minimized.

The community of Quitovac, located in Mexico and a traditional community of the Tohono O'odham Nation in Arizona, is situated approximately 12 miles northwest of the proposed landfill. As discussed previously, although it is most likely that groundwater, if present, would flow to the southwest, we cannot know for certain until monitoring wells are installed. Thus, to be conservative, one must still consider northwest as a potential direction of groundwater flow from the landfill. The Quitovac community uses the area groundwater for its drinking water. Additionally, a two-acre pond, described as a "spring complex" by the United States Fish & Wildlife Service, is present in Quitovac. In addition to being culturally significant, the pond is also habitat for the endangered Sonoyta Mud Turtle. Springs are, by definition, the surface expression of groundwater. Springs are formed in a variety of geologic environments; insufficient information is available to confidently determine if groundwater feeding the Quitovac spring has any relationship to the proposed landfill site. The distance between the landfill and Quitovac (12 miles) is substantial, and local topography suggests that the landfill area and Quitovac are hydrologically separate. However, in the absence of further hydrogeologic information, we cannot completely rule out the possibility of local communities being impacted.

Landfill Engineered Controls

The proposed facility includes a number of engineering controls which should help to reduce the risk of groundwater contamination. However, as designed, the detection system laterals will not collect accumulated liquids because they are embedded in a clay layer (Detalle (Detail) 2 from Reference 1). In response to this observation, SEMARNAT has indicated that the construction will include a modified design that places all laterals in porous media.³ We recommend that the following configuration be considered:

³ EPA phone conversation with SEMARNAT, June 13, 2006.



The proposed multi-layer base structure below the landfill will serve to both monitor generation of leachate and minimize the potential for leachate release to the environment. Because landfills have the potential to generate leachate, proper engineering controls including well-designed liners, leachate collection systems and leak detection systems are necessary to minimize risks of groundwater contamination.

3.3 Contaminant Transport by Air

The volatile nature of some hazardous wastes included in the permit for the proposed CEGIR landfill raises the issue of transport of hazardous materials by air. It is likely that some wastes would be received at the facility as liquids for which the current planned treatment (conditioning and stabilization prior to placement in the landfill) would not totally eliminate hazardous materials from being discharged to the leachate pond. However, the construction and operation of the landfill and the consequent air emissions from the leachate pond would not likely impact the United States due to the distance from the border coupled with dilution and mixing of evaporating water and volatile organic materials with the atmosphere. The lack of detailed standard operation procedures for waste acceptance and handling of liquid hazardous waste streams limits the ability to assess the effectiveness of the proposed controls and treatment practices in limiting emissions at the facility. Any effort to minimize air emissions would further reduce the potential for adverse impacts to the United States while directly and more significantly benefiting the citizens of Mexico. Although some volatile components from the leachate pond could adsorb onto dust and be transported toward the United States border during dust storms, dilution and mixing with other dust and suspended solids in the atmosphere would likely make the airborne concentrations insignificant.

The project also raises concerns about impacts to air quality from accidents such as explosions, large-scale fires, and operational activities. In the evaluation of the application by the Subsecretaría de Gestión para la Protección Ambiental, Dirección General de Impacto y Riesgo Ambiental (Subsecretary for Environmental Protection Management, Division for Environmental Impact and Risk), the events that were reportedly identified by the applicant as having the highest probability in the risk hierarchy were fire, explosion, and toxic cloud emissions. The prevailing wind direction in the area is from the southwest to the northeast; however the distance from the facility to the United States would significantly attenuate any impact.

Additional detailed information would be needed, particularly regarding emergency response procedures and preparedness, to aid in accurately assessing the ability of the facility to prevent, control, and respond to incidents that could result in air emissions and potential atmospheric

transport. SEMARNAT has indicated that an emergency response plan is currently being prepared by the CEGIR project sponsors, and a review of the plan by the State of Sonora, Protección Civil (Civil Protection), will be scheduled upon its completion.⁴

The probability that airborne contaminants from an explosion or large-scale fire would reach the United States depends on the nature of the airborne contaminants and the likelihood that the catastrophic event would occur during a period when the wind is in the direction of the United States border. To accurately assess this potential source of impact to the United States, additional information would be needed regarding the probability of the significant event (explosion or large-scale fire), the characteristics of the resulting airborne contaminants, and yearly average wind speed and direction data in the immediate vicinity of the proposed landfill. Because none of these essential components for the analysis are currently available, discussions of the direction of the prevailing wind, landfill design and operation, and a comparison to U.S. standards are included in the following subsections.

Direction of Prevailing Wind

Wind rose diagrams that depict wind velocities at a site are not available in the vicinity of the CEGIR site due to lack of detailed data. However, typical wind rose diagrams for locations in southern Arizona are shown in Figure 5 to illustrate the prevailing wind conditions that are likely to be similar to those of the northern portion of the State of Sonora. The figures were obtained from the report, *Pinal County Air Quality Control District Source Apportionment Study*, which is posted on the Internet at the following Web site:

http://co.pinal.az.us/AirQual/pdf/pinal_speciation_study.pdf. The color and length of each triangular “petal” extending from the center of the diagram indicates the wind speed and corresponding percentage of the day, while its orientation denotes the wind direction. The diagrams in Figure 5 show that on days having stronger winds (indicated by red and blue on the diagrams), the direction is toward the northeast; and that the wind direction is more randomly distributed on days with mild wind conditions (shown by yellow and black). While a yearly average wind rose diagram for the CEGIR site would be needed for an accurate assessment of the potential for transport of airborne contaminants to the United States border, the diagrams suggest that the prevailing wind direction is toward the northeast.

⁴ EPA phone conversation with SEMARNAT, June 13, 2006.

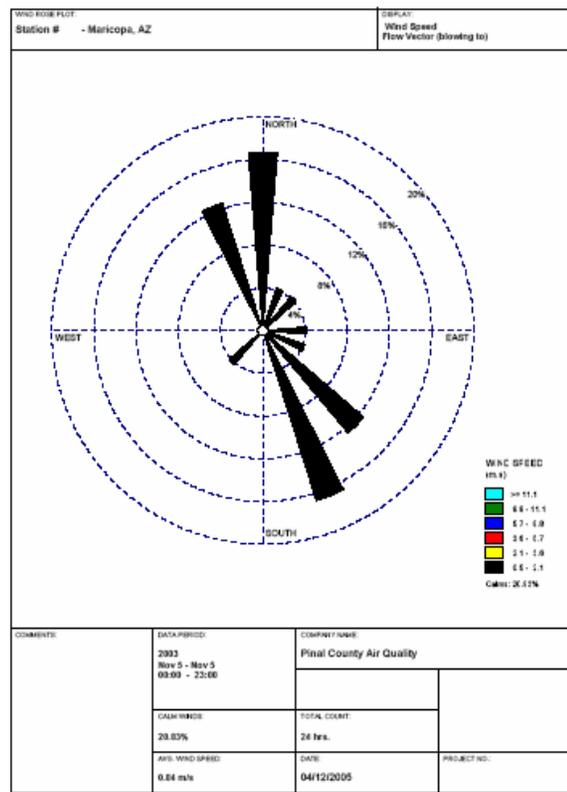
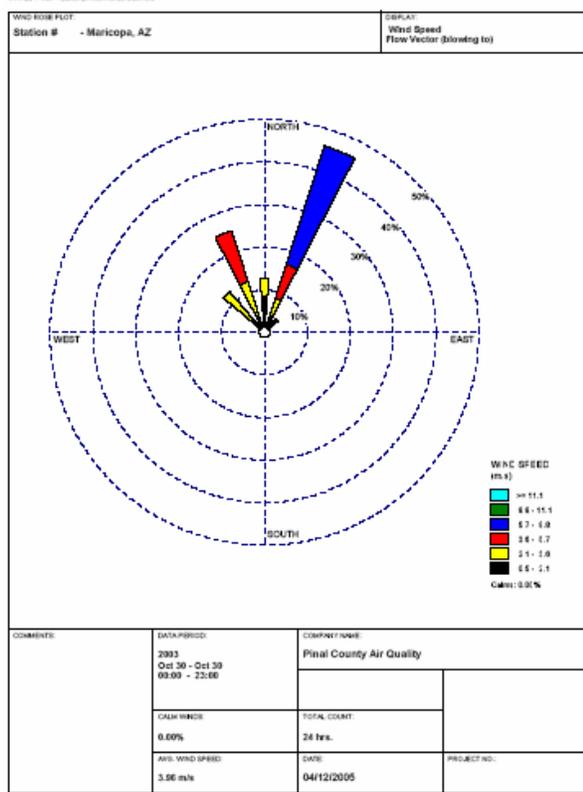
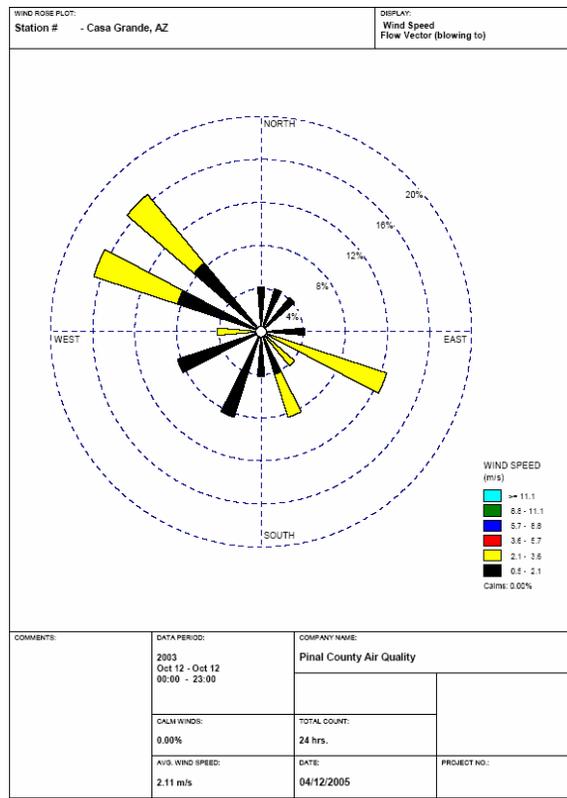
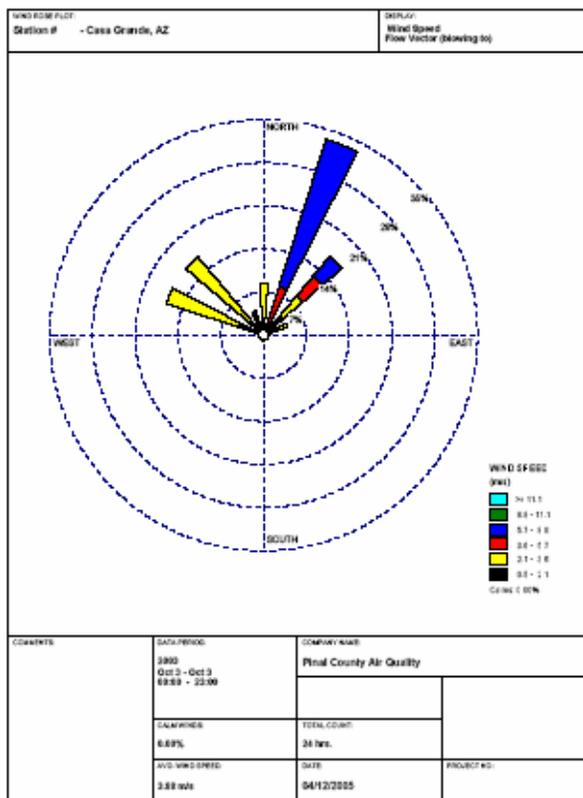


Figure 5. Typical Wind Rose Diagrams for Casa Grande and Maricopa, Arizona

Landfill Design and Operation

Many factors that could contribute to a release to the atmosphere can be addressed through engineering controls, operation and maintenance practices, and emergency response procedures and preparedness. Reference 1 describes provisions to control or mitigate these concerns, including an operations manual (Anexo [Appendix] 5) that provides some insight into the intended operation of the facility along with numerous forms covering various inspections, shipment receipt data, material balance and volatiles release information, requests for stabilization, and incident notification. However, as stated above, additional detailed information would be needed to fully evaluate risks from potential atmospheric transport.

3.4 Comparison to U.S. Standards

SEMARNAT has indicated that the operations manual for the landfill was prepared in accordance with U.S. industry practices.⁵ However, it appears that the operations manual lacks the specificity typically required under U.S. standards for new facilities (40 Code of Federal Regulations [CFR] Part 264). Examples of activities and requirements (compared to U.S. standards) that are not fully described in the operations manual include, but are not limited to the following:

- Segregation of incompatible waste in storage units and landfill cells: Appendix V to 40 CFR Part 264—Examples of Potentially Incompatible Waste, contains numerous examples of incompatible wastes that should remain segregated.
- Emergency response equipment: Covered under 40 CFR Part 264, Subpart C.
- Groundwater monitoring requirements: Covered under 40 CFR Part 264, Subpart F.
- Personnel training requirements: Covered under 40 CFR Part 264, Subpart C. In addition, Occupational Safety and Health Act (OSHA) standards require Hazardous Waste Operations and Emergency Response (HAZWOPER) training for all personnel involved with situations where hazardous materials are “prepared, packaged, labeled, marked, stored or shipped for disposal and for any facility wherein hazardous wastes are treated, stored, or disposed” per 40 CFR 1910.120.
- Manifest and recordkeeping system to track receipt, treatment, and landfill cells placement: Covered under 40 CFR Part 264, Subpart E.
- Preparedness and prevention standards: Covered under 40 CFR Part 264, Subpart C.
- Contingency plan and emergency procedures: Covered under 40 CFR Part 264, Subpart D.
- Additional requirements for individual units such as surface impoundments, waste piles, containment buildings, incinerators, drip pads, etc. (40 CFR Part 264, Subpart K - DD).
- Control of volatile organics and air emissions: Covered under 40 CFR Part 264, Subparts AA, BB, and CC. These standards, related to emissions of volatile organic compounds from hazardous waste landfills, are linked to the Clean Air Act.

⁵ EPA phone conversation with SEMARNAT, June 13, 2006.

In general, most U.S. standards are highly cross-linked to other federal regulations and standards, requiring inspection of multiple documents to accurately ascertain the various aspects of the standards. Two EPA training modules that cover operating procedures and air emission standards relevant to hazardous waste landfills are available at the following Web sites:
<http://www.epa.gov/epaoswer/hotline/training/tsdf05.pdf>
<http://www.epa.gov/epaoswer/hotline/training/air.pdf>

Any improvements in the project through implementation of effective engineering controls, operation and maintenance practices, and emergency response procedures and preparedness will benefit the United States, but Mexico has the most to gain in preventing, controlling, and responding appropriately and effectively to a release.

3.5 Transportation of Hazardous Waste

Although the overall effect of the landfill on transportation of hazardous waste is uncertain, it appears more likely that transportation of hazardous waste to the United States will be reduced.

The construction and operation of a hazardous waste disposal site will increase the current hazardous waste traffic patterns in the vicinity of the CEGIR landfill. Most, if not all, of the waste that would be deposited in the CEGIR landfill is expected to be generated by industry in northern Mexico, principally industry in Sonora. Mexican companies in or near Sonora that currently dispose of hazardous waste in the United States would have an option to dispose of hazardous waste in Sonora. The United States currently accepts most types of hazardous waste from Mexico, except explicitly prohibited wastes such as PCBs, as long as they are handled in accordance with the U.S. Resource Conservation and Recovery Act (RCRA) and state hazardous waste laws.

Mexico prohibits the importing of hazardous wastes for final treatment or disposal, except waste streams destined for “recycling” as alternative energy reuse. The CEGIR landfill permit does not include hazardous waste recycling. Therefore, hazardous waste traffic from the United States through the border ports and to the CEGIR landfill should not occur. Considering all of the above, it appears most likely that the current traffic from Mexico to the United States would be reduced, and traffic from the United States to Mexico would remain the same.

Because this impact assessment is focused on impacts to the United States from the CEGIR project, transportation impacts to local communities as a result of landfill traffic were not evaluated. However, an increase in local traffic associated with the landfill could result in an increase in traffic accidents, noise, and dust from the transportation of wastes to the site. As part of a full assessment of local impacts from the CEGIR project, road conditions should be evaluated to determine whether the roads are able to handle landfill traffic adequately.

3.6 Access of Birds to Landfill Ponds

The project raises a concern that transboundary migratory birds will be impacted due to contact with toxic chemicals resulting in their injury or mortality. Birds with habitats that include the

vicinity of the CEGIR project may be at risk if they land on or come in contact with chemical evaporation or other ponds.

Reference 1 contains a section on the vegetation and fauna of the proposed landfill site (Section V.2.3) and includes a supporting appendix regarding the flora and fauna of the region (Anexo (Appendix) 9) that examines and conducts an inventory of the fauna and flora. Two endangered plant species were identified, and recommendations on their rescue and relocation made. In Section V.2.3, Reference 1, it is indicated that it is possible to relocate reptiles, birds and small mammals to other locations that would be appropriate for their development. However, it did not address whether there are any birds, particularly special status birds that migrate or share habitats within Mexico and the United States. The Tohono O'odham Nation has reported to EPA that storks have been observed using the pond at the community of Quitovac. Therefore, based on the Tohono O'odham Nation's observations, it is possible that storks could potentially be attracted to ponds planned for construction at the CEGIR site.

Bird frightening and exclusion/barrier techniques are the two techniques most commonly used for controlling bird access to ponds and lagoons. Because netting enclosures or other mechanical means of excluding birds from an area are generally feasible only for small ponds, it is suggested that a bird frightening program be outlined as part of the operating procedures for the facility. The program should include some or all of the following elements: propane exploders, pyrotechnics, effigies (scarecrows), and harassment patrols.

Additional information would be needed to determine whether there are any transboundary migratory species that are potentially impacted and, if necessary, consult with natural resources specialists in Mexico and the United States to mitigate any potential impacts.

3.7 Cultural and Archeological Impacts

The Tohono O'odham Nation shared written concerns with EPA, stating the surface archeology study described in Reference 1 is inadequate. EPA understands that significant cultural resources and practices occur in the vicinity of Quitovac, Sonora, and recommends that SEMARNAT discuss this issue directly with the Tohono O'odham Nation's Legislative Council and Chairwoman Vivian Juan-Saunders to determine potential impacts and possible mitigation. Concurrently, EPA will continue to facilitate communication between the SEMARNAT and the Tohono O'odham Nation.

4.0 AREAS OF INSUFFICIENT INFORMATION

Little or no information was found for several aspects of the project. Including, for example, detailed procedures related to the treatment of liquid wastes and sludges and their subsequent placement in landfill cells (although a set of general operating procedures was included in Anexo (Appendix) 5 of Reference 1). Improper application of a treatment technology or failure to follow safety procedures could release hazardous waste/materials into the environment. Table 2 provides a list of the project areas that were either unavailable or lacked sufficient detail for the purposes of this assessment.

TABLE 2
AREAS OF INSUFFICIENT INFORMATION

Contaminant Transport by Air	
Planning	<ul style="list-style-type: none"> • Emergency planning and preparedness for the landfill, including coordination with the surrounding communities • Analytical requirements to ensure that the wastes are accurately characterized
Design	<ul style="list-style-type: none"> • Description of waste stabilization and treatment process technologies • Corresponding equipment/facility design
Construction	<ul style="list-style-type: none"> • Landfill construction to ensure that each cell is self-contained • Quality assurance/quality control procedures and inspection schedules
Employee Training	<ul style="list-style-type: none"> • Level of training and preparedness of the operating personnel • Health and safety training
Equipment Availability & Maintenance	<ul style="list-style-type: none"> • Adequacy of site equipment • Equipment list and maintenance schedule
Standard Operating Procedures	<ul style="list-style-type: none"> • Detailed written instruction to which all operating personnel are to adhere in the acceptance of waste, treatment/stabilization of wastes, construction of individual landfill cells, etc. • Emergency procedures, including worst-case scenarios of events and appropriate response actions
Groundwater Contamination	
Hydrology of Site and Surrounding Area	<ul style="list-style-type: none"> • Additional information, if available, about site hydrogeology and possible interconnection of aquifers in the surrounding area • Detailed information regarding groundwater elevations in wells in the surrounding area, including local municipalities, to definitively determine direction of groundwater flow
Transportation	
Traffic Impacts	<ul style="list-style-type: none"> • Adequacy of local roads for handling landfill traffic (e.g., road conditions) • Factors contributing to the generation of noise and dust
Access of Birds to Landfill	
Migratory Birds	<ul style="list-style-type: none"> • Provisions to prevent access of birds to evaporative ponds or other areas that may cause an injury or mortality to birds • Consultation between Mexican and U.S. natural resources specialists, as necessary

5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The key conclusions of this initial assessment may be summarized as follows:

1. Impacts to surface water emanating from the landfill that would reach the United States border are considered to be unlikely, given the topography of the area and general slope of the terrain toward the southwest, away from the border.
2. Impacts to United States groundwater by possible discharge(s) of leachate from the CEGIR landfill are considered to be unlikely, given the local geology, distance to the United States, lack of precipitation and proposed engineering controls for the landfill. However, since containment is the best way to minimize the impact to groundwater, it is prudent to install the most effective leachate containment system possible. We recommend, and SEMARNAT concurs, that the design of the leachate collection and leak detection systems be modified so that laterals are not embedded in clay.⁶ The clay layer should be placed below the bottom of flexible membrane liner, and sand layers should be placed on top of each liner to surround and support the two sets of laterals.
3. Impacts to local air quality that could result in atmospheric transport of hazardous and toxic materials in transboundary plumes resulting from explosions, large-scale fires, and operational activities present a potential risk to the United States, however, the distance from the facility to the U.S.-Mexico border would significantly attenuate any impact. In addition, adequate treatment technologies, training, and safety program measures would help mitigate potentially adverse impacts to the United States associated with atmospheric transport of hazardous materials. We recommend that SEMARNAT prepare an emergency response plan.
4. Additional information would be needed to determine whether there are any transboundary migratory species that are potentially impacted and, if necessary, consult with natural resources specialists in Mexico and the United States to mitigate any potential impacts.
5. The Tohono O'odham Nation shared written concerns with EPA, stating the surface archeology study described in Reference 1 is inadequate. EPA understands that significant cultural resources and practices occur in the vicinity of Quitovac, Sonora, and recommends that SEMARNAT discuss this issue directly with the Tohono O'odham Nation's Legislative Council and Chairwoman Vivian Juan-Saunders to determine potential impacts and possible mitigation. Concurrently, EPA will continue to facilitate communication between SEMARNAT and the Tohono O'odham Nation.

⁶ EPA phone conversation with SEMARNAT, June 13, 2006.

APPENDIX A
Comments from Other Entities on the Proposed CEGIR Project

TOHONO O'ODHAM NATION

*Concerns about the Proposed Hazardous Waste Facility
near Quitovac, Sonora*

The Tohono O'odham Nation has studied the described design and operation of the proposed CEGIR hazardous waste facility, concluding that the facility poses serious environmental and health risks for all residents of the trinational area of Sonoran desert where it would be located for perpetuity. The Tohono O'odham Nation, as a sovereign tribal government, officially opposes the construction of the CEGIR facility for the following reasons.

Potential Environmental and Community Impacts of the Facility

Water Quality Impacts

- No inventory of existing wells in the area has been performed (Rancho Vietnam, Hecla Mine, Quitovac, Las Norias).
- No exploratory drilling for water was done on site.
- No assessment of surface water impact on downstream users has been done.
- The study has not adequately considered the regional geologic setting, and there is not geologic map.
- The study has not adequately considered the regional hydrologic setting of the alluvial basin containing the site.
- Geophysics is the sole basis for the assertion that no aquifer is present.
- No description of monitoring wells to the water table.
- Potential impact on well water in Quitovac and Las Norias has not been assessed.
- No description of a monitoring plan.

Air Quality Impacts

- No emissions estimate for overall facility due to lack of data information.
- Organic sludges accepted may generate methane, but there is no plan to collect and properly flare it (or utilize it to prevent flammability) at the site.
- The possibility of volatilization above the ponds is not addressed.
- The possibility of dust emissions that contain heavy metals and other concentrated materials is not discussed.
- There is no mention of daily covering of wastes with soil or other proper cover to reduce emissions.
- A systematic approach to reduce dust emissions (via covers, wind breaks, moistening of soil before removal, etc.) is not presented.

Wildlife and Vegetation Impact

- Incomplete inventory of wildlife on the site.
- Incomplete plan for relocation of wildlife and vegetation before constructions.

Historical and Cultural Impact

- The surface archeology study completed is inadequate.
- The facility could endanger the health of Tohono O'odham tribal members who reside in the traditional communities of Quitovac and Las Norias.

Transportation Impact

- No assessment whether Highway 2 can handle additional traffic of large, heavy waste trucks.
- No assessment of danger to communities along Highway 2 due to increased traffic and hazardous spills.
- No plan for managing hazardous spill on Highway 2.

Concerns about the Design and Management of the Facility**Facility Management**

- No emergency response plan has been developed.
- The emergency scenario presented is for one chemical, and is therefore not a worst case scenario.
- No plan for community participation in oversight and inspections.
- No provisions for daily/weekly inspections.
- No description of corrective public process measures for permitting that referenced the wrong municipality.
- No assurance that a cell or evaporation pond will be complete before put into use.
- The financial feasibility analysis is weak, with not enough funding allowed for emergency response, closure and post-closure procedures.
- Only \$30,000 (U.S.) is projected for remediation of environmental damage
- No plan is outlined for rejecting and redirecting U.S. trucks/wastes or Mexican trucks with unsuitable waste.
- Qualifications of and number of personnel to test waste or conduct on-site inspections are not described.
- The capacity of the laboratory on site to test waste is not adequately described.
- The staffing, facilities and equipment necessary to test every truckload of waste (as proposed in the permit) are not adequately described.

Waste Management Procedures

- Wastes that cannot be stabilized will be rejected, but which are these, and what is the process to follow-up on where they are forwarded?
- No data regarding the volumes and type of wastes expected.
- No description of how wastes will be segregated within cells to avoid incompatibility.

- It is not clear what level of liquid waste will be accepted and if it will be mixed with solid waste in cells, or only directed to the evaporation ponds.
- It appears that chlorinated organic solvents will be accepted, some of which have flammable vapors.
- None of the stabilization methods listed seems suitable for treating relatively concentrated organic solvents.
- A physical-chemical treatment plant is proposed for processing waste, but what will be its design and capacity, particularly for wastes with multiple contaminants?
- What will be the composition of the treated residue that is sent to the lagoon?
- Methods of analysis of waste are not described.
- There is no assurance that cutting fluids (and other waste) that exceed the proposed PCB concentration will not be accepted at the site.
- How will wastes be stored between delivery and processing/disposal?
- How will the contaminated water from truck washing stations be disposed of (into the lagoon?)
- It is unclear if active revegetation will be promoted after closure.
- The Sonoran owner is not identified on the permit materials.
- Will pesticides be accepted or not?
- Temporary storage – How long will waste be stored?

Waste Cell Design and Protection

- No plan presented for waste segregation within cells. How will incompatible substances be handled?
- No description of procedures for cell management, particularly covering.
- No plan for venting covered cells.
- No plan for preventing bird and mammals from entering cells.
- No closure and/or reclamation plans once a cell has been closed.

Evaporation Pond Design and Protection

- No plans to prevent the poisoning of migratory birds.
- Will raised berms and/or armor be used on evaporation ponds?
- What is the estimate of failure of evaporation ponds if berms are used (breaches)?
- How much leachate from cells and treated wastewater will be directed to the lagoons?
- Monitoring of the lagoon should be more frequent than described, and periodic testing of the solids at the bottom should be performed periodically as well.
- Evaporation Ponds design to be same as cell design i.e., double liner, clay, etc.

Sells, Arizona, June 6, 2006

RESOLUTION OF THE TOHONO O'ODHAM LEGISLATIVE COUNCIL
(Opposing Proposed Hazardous Waste Facility Near Quitovac, Sonora and Adopting
Concerns Document as Nation's Official Position)

RESOLUTION NO. 06-352

- 1 **WHEREAS,** Tohono O'odham have dwelled in this region since time-immemorial including areas
2 of the region that now encompass northern portions of the Republic of Mexico; and
3 **WHEREAS,** historical treaties and agreements between the United States of America and Mexico
4 divided the ancestral homeland of the O'odham and its members; and
5 **WHEREAS,** today there continue to exist members and persons eligible for membership in the
6 Tohono O'odham Nation from a number of traditional O'odham communities in
7 Mexico, including the community of Quitovac, Sonora, Mexico; and
8 **WHEREAS,** the Constitution of the Tohono O'odham Nation in Article I-Jurisdiction, Section 3,
9 provides, *"The sovereign powers, authority and jurisdiction of the Tohono O'odham*
10 *Nation and its government over members of the Tohono O'odham Nation shall extend*
11 *beyond the geographical boundaries of the Tohono O'odham Nation."*; and
12 **WHEREAS,** the Constitution of the Tohono O'odham Nation in Article XVIII-Environmental
13 Policy, Section I, provides, *"It shall be the policy of the Tohono O'odham Nation to*
14 *encourage productive and enjoyable harmony between members of the Nation and*
15 *their environment; to promote efforts which will preserve and protect the natural*
16 *and cultural environment of the Tohono O'odham Nation, including its land, air,*
17 *water, flora and fauna, its ecological systems, and natural resources, and its historic*
18 *and cultural artifacts and archeological sites; and to create and maintain conditions*
19 *under which members of the Nation and nature can exist in productive harmony and*
20 *fulfill the social, economic, and other requirements of present and future*
21 *generations of members of the Tohono O'odham Nation."*; and
22 **WHEREAS,** the Tohono O'odham Nation has factual information that a hazardous waste disposal
23 facility, initially known as *"La Choya"* and now known as *"CEGIR"* is planned to be
24 constructed near Sonoyta, Sonora (hereinafter referred to as the "Hazardous Waste
25 Project"); and
26 **WHEREAS,** the Hazardous Waste Project is not intended to provide treatment or recycling
27 operations, but is instead intended to be a final hazardous waste disposal facility; and

RESOLUTION NO. 06-352**(Opposing Proposed Hazardous Waste Facility Near Quitovac, Sonora and Adopting Concerns Document as Nation's Official Position)****Page 2 of 4**

- 1 **WHEREAS, as a final hazardous waste disposal facility, the site is projected to have, among**
2 **numerous other provisions, a 50-year active life span with an average of 45,000 tons**
3 **of hazardous waste received annually; and**
- 4 **WHEREAS, in light of the potential impacts of the construction and operation of the Hazardous**
5 **Waste Project, it is essential that the Agreement on Cooperation for the Protection**
6 **and Improvement of the Environment and Transboundary Problems, North**
7 **American Agreement on Environmental Cooperation (NAFTA Environmental**
8 **Supplemental Agreement), Border 2012 agreements, and all other applicable treaties**
9 **and agreements be reviewed prior to final approval or construction of the Hazardous**
10 **Waste Project to ensure compliance; and**
- 11 **WHEREAS, a delegation of representatives from the Tohono O'odham Nation's legislature, both**
12 **of the Nation's border districts, Chukut Kuk and Gu Vo, respectively, and the**
13 **Executive Branch have met on numerous occasions over the course of the past three**
14 **months to learn more about the Hazardous Waste Project and discuss the potential**
15 **impacts the Hazardous Waste Project may have on the ancestral lands and members**
16 **of the Tohono O'odham Nation in Mexico including the potential impacts to the**
17 **Nation's members and existing lands in the United States; and**
- 18 **WHEREAS, this delegation of Nation's representatives has questioned and expressed concerns**
19 **related to the Hazardous Waste Project to appropriate members of CIGIRSA (the**
20 **Hazardous Waste Project owners) and developers for "CIGIR", Mexico's Secretariat**
21 **of the Environment and Natural Resources ("SEMARNAT"), the Office of the Emergency**
22 **Management Director for the State of Sonora, the Arizona Department of**
23 **Environmental Quality; and United States Environmental Protection Agency - Waste**
24 **Management Division; and**
- 25 **WHEREAS, these questions and concerns were raised at various meetings in Rio Rico, Arizona;**
26 **Hermosillo, Sonora; Ensenada, Baja California; and Tucson, Arizona; and**
- 27 **WHEREAS, it was the consensus of the Nation's delegation that the attached document titled**
28 ***"Tohono O'odham Nation - Concerns about the Proposed Hazardous Waste Facility***

RESOLUTION NO. 06-352
(Opposing Proposed Hazardous Waste Facility Near Quitovac, Sonora and Adopting Concerns Document as Nation's Official Position)
Page 3 of 4

1 *near Quitovac, Sonora*" be developed in an effort to bring to light the potential
2 impact this Hazardous Waste Project could have, not only to the ancestral lands and
3 members of the Nation in Mexico, but the potential impacts to the Nation's members
4 and land in the United States as well; and

5 WHEREAS, it would not be in the best interest of the Tohono O'odham Nation within the United
6 States of America and or the best interest of the Nation within the ancestral lands of
7 the O'odham in Mexico to allow the establishment of a Hazardous Waste Project at
8 the proposed identified location near Quitovac, Sonora; and

9 WHEREAS, it was the consensus of the Legislative Council Domestic Affairs Committee and the
10 Office of the Chairwoman and appropriate Executive Branch departments that the
11 Tohono O'odham Nation opposes the establishment of the Hazardous Waste Project
12 for the reasons outlined in the attached document and for other reasons not
13 immediately known to the Nation.

14 NOW, THEREFORE BE IT RESOLVED that the Tohono O'odham Nation Legislative Council hereby
15 (1) adopts the "*Tohono O'odham Nation - Concerns about the Proposed Hazardous*
16 *Waste Facility near Quitovac, Sonora,*" as its official position and (2) opposes the
17 establishment of any proposed Hazardous Waste Project for the reasons outlined in
18 that document and for reasons not immediately known to the Tohono O'odham
19 Nation.

20 The foregoing Resolution was passed by the Tohono O'odham Legislative Council on the 07th Day
21 of JUNE, 2006 at a meeting at which a quorum was present with a vote of 2,440.80 FOR; -0- AGAINST;
22 -0- NOT VOTING; and 1041 ABSENT, pursuant to the powers vested in the Council under Article VI,
23 Section 1(c)(2) and 1(f)(2); Article XVI, Section 2; Article XVII; and Article XVIII, Section 2 of the
24 Constitution of the Tohono O'odham Nation, adopted by the Tohono O'odham Nation on January
25 18, 1986; and approved by the Acting Deputy Assistant Secretary - Indian Affairs (Operations) on
26 March 6, 1986, pursuant to Section 16 of the Act of June 18, 1934 (48 Stat. 984).

28 TOHONO O'ODHAM LEGISLATIVE COUNCIL

29
30
31 
32 Evelyn B. Juan Manuel, Legislative Chairwoman

33
34 15th day of Jan, 2006

RESOLUTION NO. 06-352
(Opposing Proposed Hazardous Waste Facility Near Quitovac, Sonora and Adopting Concerns Document as Nation's Official Position)
 Page 4 of 4

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ATTEST:

Juliana Sarezis
 Lucille Lopez, Acting Legislative Secretary for
 15th day of June, 2006.

Said Resolution was submitted for approval to the office of the Chairwoman of the Tohono O'odham Nation on the 15th day of June, 2006 at 3:27 o'clock, P.M., pursuant to the provisions of Section 5 of Article VII of the Constitution and will become effective upon her approval or upon her failure to either approve or disapprove it within 48 hours of submittal.

TOHONO O'ODHAM LEGISLATIVE COUNCIL

Evelyn B. Juan Manuel
 Evelyn B. Juan Manuel, Legislative Chairwoman

APPROVED

on the 16 day of June, 2006

DISAPPROVED

at 7:29 o'clock, P.M.

Vivian Juan Saunders
 VIVIAN JUAN SAUNDERS, CHAIRWOMAN
 TOHONO O'ODHAM NATION

Returned to the Legislative Secretary on the 19 day of

June, 2006, at 9:04 o'clock, A.M.

Lucille Lopez
 Lucille Lopez, Acting Legislative Secretary

Vivian Juan-Saunders
Chairwoman



Vacant
Vice Chairman

TOHONO O'ODHAM NATION

P.O. Box 837 Sells, Arizona 85634
Telephone (520) 383-2028 Fax (520) 383-3379

September 26, 2006

Wenona Wilson
Senior Tribal Coordinator
EPA Region 9
Waste Management Division
75 Hawthorne Street, WST-1
San Francisco, California 94105

Dear Ms. Wilson,

The Tohono O'odham Nation appreciates this opportunity to provide comments on the United States Environmental Protection Agency draft document entitled "Assessment of Potential Impacts to the United States of the CEGIR Hazardous Waste Landfill in Sonora, Mexico" dated September, 2006.

Following are specific comments to the document:

- Page 4, Section 2.1. Does SEMARNAT have formal specific criteria or guidance for siting of hazardous waste facilities?
- Page 5, Section 3.0 - Table 1. The table indicates that the closest U.S. Community from the CEGIR Project is a community named Shagkam within the Tohono O'odham Nation. Please note that there is no community by that name.
- Page 7, Section 3.2, third paragraph. Will installation of the groundwater monitoring wells mentioned be a formal condition of the SEMARNAT hazardous waste facility permit? When would the permit be revised? At a minimum, formal communication between SEMARNAT and the facility owners needs to be in place as soon as possible.
- Page 7, Section 3.2, fourth paragraph. The mentioned mountain gap bedrock could be very shallow and direct the groundwater flow elsewhere. Although the document indicates that the U.S. would still not be impacted, there are local Tohono O'odham communities which could be impacted.

- Page 11, Section 3.2, first paragraph. Data from the nearby La Choya Mine (i.e. groundwater wells and exploration drilling sites) could be evaluated to get further insight to the groundwater flow in the area.
- Page 11, Section 3.2, fourth paragraph.-landfill engineered controls. Again, will the permit be revised to make this a formal condition?
- Page 16, Section 3.5, second paragraph. Mexico highway 2 is only two lanes with no shoulders. The possibility of accidents is high, especially on exiting to the facility. Any improvements planned?
- Page 16, Section 3.5, third paragraph. The Mexican recycling policy may allow certain waste streams, such as metal sludges (F006, for example) to be sent for recycling because of precious and other metals contained in the waste.
- Page 16, Section 3.6. Please note, that storks have been observed using the pond at the community of Quitovac.

In addition to the comments provided, the Tohono O'odham Nation retains its position in opposing the construction of the CEGIR facility as demonstrated in the "Position Paper" and supporting Tohono O'odham Legislative Council Resolution No. 06-352 approved June 7, 2006 which were an attachment to the U.S. EPA Assessment document.

The Tohono O'odham Nation would like to take this opportunity to thank Mr. Clancy Tenley, Manager, Tribal Programs Office; Mr. Tomas Torres, Team Leader, US/Mexico Border Team; and Mr. David Jones, Associate Director of Waste Management Division for providing a presentation on the EPA Assessment and the discuss concerns with the Tohono O'odham Legislative Council on September 14, 2006 in Sells, Arizona.

If you should have any questions, please contact Lorinda Sam, Environmental Specialist Supervisor at (520) 383-8113. Thank you.

Sincerely,



Vivian Juan-Saunders
Chairwoman



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov



Stephen A. Owens
Director

October 17, 2006

Mr. Wayne Nastri
Regional Administrator
U. S. EPA Region 9
75 Hawthorne St., ORA-1
San Francisco, CA 94105

Dear Mr. Nastri:

This letter comments on Booz Allen Hamilton, Inc.'s September 2006 assessment report of potential impacts of the proposed CEGIR hazardous waste landfill project in Sonora, Mexico.

The Arizona Department of Environmental Quality (ADEQ) gives great attention to transboundary environmental impacts along Arizona's border with Mexico, consistent with the 1983 La Paz Agreement between the United States and Mexico. Article 2 of the Agreement states that "*the Parties shall cooperate in the solution of the environmental problems of mutual concern in the border area*" and Article 4 defines the term "border area" as "*the area situated 100 kilometers on either side of the inland and maritime boundaries between the Parties.*"

Consequently, our comments reflect our concern for clean and healthy environmental conditions for residents throughout the 200 kilometer-wide geographical region defined as the "border area" and for sound environmental management for the protection of the public and natural resources in the Arizona-Sonora portion of the border area.

While ADEQ finds the Booz Allen Hamilton, Inc. report to be a concise statement that reaffirms many of the technical questions that have been raised about the project in various meetings, the report does not fully address the questions and concerns that have been expressed by stakeholders including, in particular, the Tohono O'odham Nation.

The Tohono O'odham Nation has put forth a significant number of valid technical questions in the document titled "Concerns about the Proposed Hazardous Waste Facility near Quitovac, Sonora" dated June 6, 2006. This document was incorporated into the consultant's report as part of Appendix B, but the questions and concerns posed by the Tohono O'odham Nation are not all individually addressed in the report.

Northern Regional Office
1801 W. Route 66 • Suite 117 • Flagstaff, AZ 86001
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Administrator Wayne Nastri
October 17, 2006
Page 2

The consultant's identification of "Areas of Insufficient Information", which is presented in Table 2 and augmented by text throughout the report, demonstrates that numerous valid questions still remain about this proposed facility. Important technical questions such as these would have to be addressed for such a facility to be licensed in the state of Arizona and, arguably, anywhere in the United States. The persistence of such significant information gaps after many months of discussions with SEMARNAT and the project proponents has led to concerns by key stakeholders such as the Tohono O'odham Nation and community representatives in the Mexican municipality of Plutarco Elias Calles. The denial of CEGIR's land rezoning request by the Mexican mayor and council of this municipality is clear evidence that such concerns exist among pertinent Mexican governmental authorities at the local level.

ADEQ believes very strongly that the concerns raised by the Tohono O'odham Nation and others must be appropriately addressed before this project goes forward and that further analysis and, hopefully, resolution of these above cited questions and concerns be accomplished by the project proponent and SEMARNAT in coordination with the U.S. Environmental Protection Agency. Without such additional technical rigor and transparency in future decision making, ADEQ can not feel assured that the project will be constructed and managed in a manner that will fully protect the natural resources and public health in the Arizona-Mexico border region.

We appreciate the opportunity to comment on the consultant's report and trust our recommendations will prove useful in further efforts to evaluate and improve this important project.

Please contact ADEQ's Border Environmental Manager, Plácido dos Santos, at (520) 628-6744 or pds@azdeq.gov if you have any questions.

Sincerely,



Stephen A. Owens
Director

cc: Emily Pimentel, WST-1

APPENDIX B
Summary of Documents Reviewed

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Summary of Documents Reviewed

This appendix provides a summary of the documents made available to Booz Allen Hamilton for review regarding the CEGIR project. The documents included:

- Manifestación de Impacto Ambiental, Modalidad Regional y el Estudio de Riesgo Ambiental (Environmental Impact Statement, Regional and Environmental Risk Study)
- SEMARNAT's Evaluation of "Manifestación de Impacto Ambiental (Environmental Impact Statement)"
- Autorización para el Confinamiento de Residuos Peligrosos (Authorization for a Hazardous Waste Landfill) (26-48-PS-VIII-01-2005)
- Licencia Ambiental Única (Exclusive Environmental License) No. LAU-09/00664-2005.

The content of each of these documents is described below:

Manifestación de Impacto Ambiental, Modalidad Regional y el Estudio de Riesgo Ambiental (Environmental Impact Statement, Regional and Environmental Risk Study)

This document is the facility submission of an environmental impact statement and risk assessment to SEMARNAT, dated April 28, 2005, pursuant to Artículo (Article) 28 of the Ley General del Equilibrio Ecológico y la Protección al Ambiente (LGEEPA) (General Law of Ecological Balance and Environmental Protection). The report describes not only environmental impacts, but also project details regarding site selection, project design, construction activities, and anticipated operating conditions (including description of waste management activities). In addition, the report contains the following appendices:

- Anexo 1: Project Drawings
- Anexo 2: Property Deed
- Anexo 3: Organizational Charter
- Anexo 4: Legal Power of Attorney
- Anexo 5: Operations Manual
- Anexo 6: Hydrological Study
- Anexo 7: Geophysical Study
- Anexo 8: Archeological Study
- Anexo 9: Flora and Fauna Study
- Anexo 10: Site Selection Study
- Anexo 11: Layered Maps

SEMARNAT's Evaluation of "Manifestación de Impacto Ambiental (Environmental Impact Statement)"

This evaluation dated September 6, 2005 documents SEMARNAT's analysis of the environmental impact statement submitted by CEGIR and establishes construction and operating conditions for the project required to minimize environmental impacts.

Autorización para el Confinamiento de Residuos Peligrosos (Authorization for a Hazardous Waste Landfill) (26-48-PS-VIII-01-2005)

This document constitutes the authorization by SEMARNAT issued to CEGIR on October 13, 2005 that allows for the receipt, management, and disposal of hazardous wastes specified in this authorization. The authorization also includes the treatment methods and treatment capacity for the facility. The authorization is valid for a period of five years.

Licencia Ambiental Única (Exclusive Environmental License) No. LAU-09/00664-2005

This document is a comprehensive environmental permit issued by SEMARNAT to CEGIR on October 27, 2005. The comprehensive permit coordinates the requirements pertaining to air emissions, wastewater discharges, waste management, and environmental impact. It is a one-time permit required for new facilities or facilities undergoing significant modifications. This environmental permit references the previously issued environmental impact evaluation and the authorization for management of hazardous waste (26-48-PS-VIII-01-2005) as permit conditions.