

# Health Consultation

---

FORMER ARIZONA TANNING COMPANY SITE  
(a/k/a SANTAN TANNERY)

SANTAN INDUSTRIAL PARK, DISTRICT 4

GILA RIVER INDIAN COMMUNITY

PINAL COUNTY, ARIZONA

EPA FACILITY ID: AZD074441676

**Prepared by the  
Gila River Indian Community**

MAY 21, 2010

Prepared under a Cooperative Agreement with the  
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

## **Health Consultation: A Note of Explanation**

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR Toll Free at  
1-800-CDC-INFO

or

Visit our Home Page at: <http://www.atsdr.cdc.gov>

HEALTH CONSULTATION

FORMER ARIZONA TANNING COMPANY SITE  
(a/k/a SANTAN TANNERY)

SANTAN INDUSTRIAL PARK, DISTRICT 4

GILA RIVER INDIAN COMMUNITY

PINAL COUNTY, ARIZONA

EPA FACILITY ID: AZD074441676

Prepared By:

Gila River Indian Community  
Office of Occupational Safety and Health  
Under a Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry



## Table of Contents

Statement of the Issue.....	1
Background.....	1
Discussion.....	4
<i>Groundwater Testing</i> .....	7
<i>Asbestos Testing</i> .....	9
<i>Physical Hazards</i> .....	10
<i>Site Unknowns</i> .....	10
Exposure Pathway Analysis.....	11
Health Effects Evaluation.....	12
Community Health Considerations.....	13
Conclusions.....	13
<i>Conclusion 1</i> .....	13
<i>Conclusion 2</i> .....	14
<i>Conclusion 3</i> .....	14
<i>Conclusion 4</i> .....	14
Recommendations.....	15
Public Health Action Plan.....	15
For More Information.....	16
References.....	17
Preparers of Report.....	20
Certification.....	21
Appendix A – Arial Photograph of Arizona Tanning Company Site.....	22
Appendix B – Location of Former Arizona Tanning Company.....	23
Appendix C – Arizona Tanning Company Surface Waste Water Impoundments.....	24
Appendix D – Test Sample Locations.....	25
Appendix E – Approximate Direction of Groundwater Flow.....	26
Appendix F – Hydraulic Conductivity of Groundwater.....	27
Appendix G – One-Mile Radius.....	28
Appendix H – South Wall of Processing/Storage Building.....	29
Appendix I – North Surface Waste Water Impoundment Area.....	30
Appendix J – Landfill (Pond 2).....	31
Appendix K – Monitoring Well.....	32
Appendix L – Fall Hazard.....	33
Appendix M – Drowning Hazard.....	34



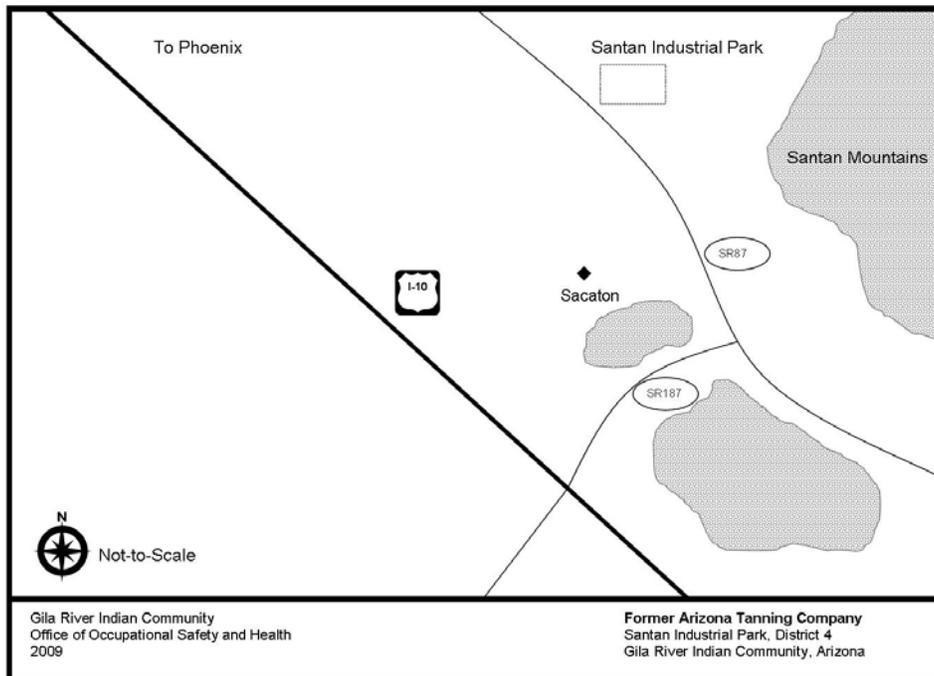
## Statement of the Issue

In late 2009, members of the Gila River Indian Community (GRIC) began expressing concerns about the abandoned Arizona Tanning Company Site. Specifically, members of the Community requested to know if chromium (Cr) once used by the company as part of their industrial production process has negatively impacted the quality of groundwater in the area. To address this concern, the Office of Occupational Safety and Health (OSH) initiated a Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) to evaluate if chromium in the groundwater presents a health hazard to families living near the site. As part of this health consultation, existing environmental data was reviewed and OSH staff conducted a site inspection of the Former Arizona Tanning Company Site. A health-based interpretation of environmental data is presented in this health consultation along with conclusions and recommendations.

## Background

The Former Arizona Tanning Company Site is located in the Santan Industrial Park, approximately 5-miles northwest of Sacaton, AZ on the north side of State Route 87. The Santan Industrial Park is within District 4 of the Gila River Indian Community, Pinal County, Arizona (Figure 1.). Records from the U. S. Bureau of Indian Affairs (BIA) indicate that the tanning facility began operation within the Gila River Indian Community between the years of 1978 and 1980.<sup>1,2</sup> Ariel photographs taken of the Arizona Tanning Company in 1980 show the facility in full operation within the Santan Industrial Park.<sup>3</sup>

**Figure 1.**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**



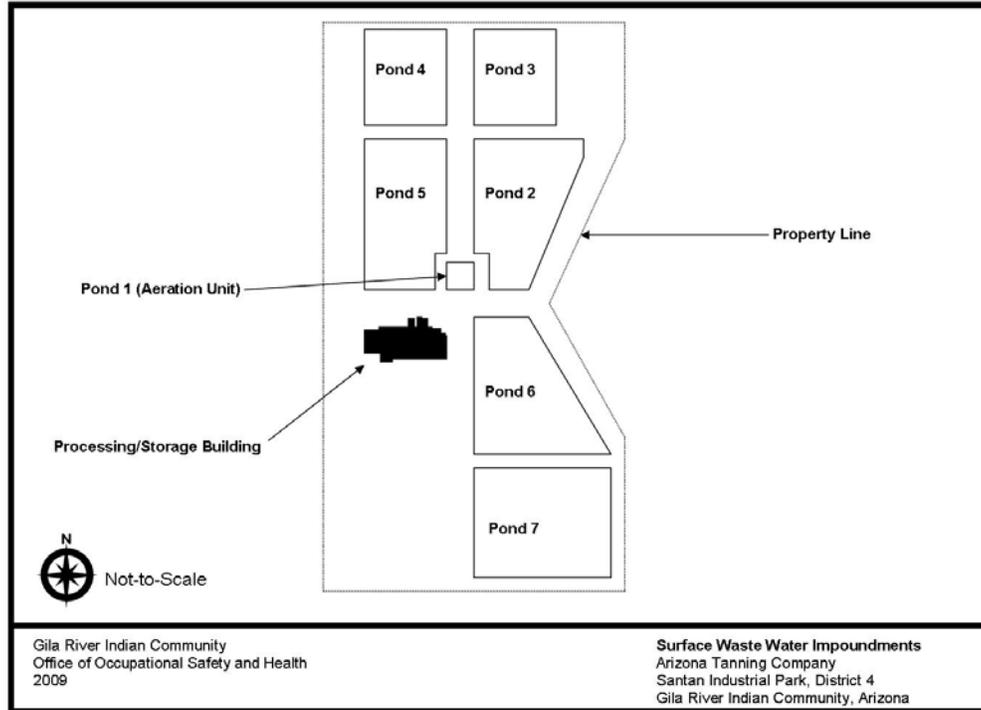
Tanning production conducted by the Arizona Tanning Company lasted approximately ten years (circa 1980 to 1990) at the Santan Industrial Park. It is unknown what business decisions prompted closure of the facility. However, in June 1991 a closure plan was submitted to the Gila River Indian Community as part of the Arizona Tanning Company's lease agreement.<sup>4</sup>

During its ten-year operational period, the Arizona Tanning Company employed a "through-the-blue" leather tanning process.<sup>5</sup> The through-the-blue or "wet-blue" process is a leather industry term used for chromium tanned leather. The word "blue" describes the coloration of the end-product leather due to the use of chromium. As a leather industry standard, chrome tanned leather tends to be softer and more pliable than vegetable-tanned leather, has a higher thermal stability, is very stable in water and takes less time to produce. In 1997 chrome tanning represented ninety percent of U.S. leather production.<sup>6</sup>

The facility located at the Santan Industrial Park once operated a processing/storage building (approximately 43,000 S.F.) and seven waste water impoundments. The seven waste water impoundments included six (6) waste water evaporation ponds (each approximately 3 acres in size) and one (1) aeration unit/pond (approximately 1/3 of an acre in size). Waste water from the tanning process was treated onsite by first filtering out fats and bio-solids, then oxidizing the remaining organic constituents in the aeration unit. After completing the oxidation process, waste water was then pumped to the six ponds and allowed to evaporate (Figure 2.). Once evaporation of the waste water occurred, the resultant dried sludge was removed from the ponds and disposed of onsite into what is described as a "sludge disposal unit" approximately one-half acre in size. The location of this onsite sludge disposal unit remains unknown.<sup>7</sup>

The Arizona Tanning Company used various acids, bases, salts, sulfides, fungicides, enzymes and chrome compounds as part of the process for tanning hides.<sup>8</sup> Chrome tanning is performed using a one-bath process that is based on the reaction between the hide and a trivalent chromium salt, usually a basic chromium sulfate.<sup>9</sup> One of the Arizona Tanning Company's listed chemicals was sodium dichromate. Sodium dichromate is a commercial source of hexavalent chromium. According to N. Weiss and Associates (NWA), it was not uncommon for some tanners to convert commercial sources of hexavalent chromium (usually sodium dichromate) into a tanning salt *in situ*.<sup>10</sup> The International Chromium Development Association (ICDA) states that only trivalent chromium sulfate possesses the properties needed to achieve tanning. The ICDA goes on further to say that many tanneries in the past reduced hexavalent chromium ( $\text{Cr}^{+6}$ ) to trivalent chromium ( $\text{Cr}^{+3}$ ) during the tanning process.<sup>11</sup>

**Figure 2.**  
**Surface Waste Water Impoundments**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**



In 1991, that Arizona Tanning Company initiated the process required to close its facility located at the Santan Industrial Park. As part of this process, Arizona Tanning Company contracted EMCON Associates (EMCON) to provide a site assessment and closure proposal. EMCON provided a site closure proposal to the Arizona Tanning Company on 11 November 1991. In EMCON's 1991 proposal, project staff determined that the waste water once produced by the Arizona Tanning Company located at the Santan Industrial Park did not meet the qualifications required to be considered hazardous waste as defined by the Code of Federal Regulations, Title 40 – Protection of the Environment, Part 261 – Identification and Listing of Hazardous Waste. This determination was based on assessments reportedly conducted by EPA and other consultants (Table 1).<sup>12</sup>

Because the waste water once produced by the Arizona Tanning Company was determined to be non-hazardous waste, EMCON proposed onsite disposal of the remaining sludge. As a result, the proposal called for the construction of a disposal cell which would consolidate the remaining sludge from the seven waste water surface impoundments into one existing impoundment and covering it with soil that made up the bermed walls. The proposal also called for locating the disposal cell within the northern waste water impoundment area.<sup>13</sup>

Final closure of the Arizona Tanning Company facility at the Santan Industrial Park was completed by EMCON in 1992. As proposed in their 1991 closure plan, EMCON consolidated sludge from the surface waste water impoundments into one existing impoundment (Pond 2). Pond 2 was closed as a landfill by taking the soil that made up the bermed walls of the six remaining impoundments and placing it on top of Pond 2 as a cover (cap) to minimize downward entry of moisture into the sludge waste. The northern waste water surface impoundment area surrounding Pond 2 was graded by EMCON to ensure positive site drainage.

**Table 1.**  
**Sludge Produced by the Arizona Tanning Company, Sacaton, Arizona**  
**Criteria Utilized by EMCON for Exclusion from the**  
**Code of Federal Regulations (40 CFR 261)**  
**EMCON Proposal P91X-008**

- *Non-EP Toxic (40 CFR 261.24) with respect to chromium* <sup>(1), (3)</sup>
- *Below 0.5 mg/kg for chromium VI* <sup>(1)</sup>
- *Non-corrosive (pH 9) as described in 40 CFR 261.22* <sup>(2)</sup>
- *Non-ignitable (40 CFR 261.21)* <sup>(2)</sup>
- *Non-reactive (40 CFR 261.23)* <sup>(1), (2)</sup>
- *Non-EP Toxic with respect to 40 CFR 261.24 metals* <sup>(2), (3)</sup>
- *Non-TCLP for metals (40 CFR 261.24, 55 FR 11862, March 29, 1990 as amended at 55 FR 22684, June 1, 1990; June 29, 1990)* <sup>(4)</sup>

*(1) U.S. EPA site assessment performed January 9, 1988*

*(2) Western Technologies Inc., September 11, 1987*

*(3) Brown and Caldwell, January 25, 1990*

*(4) The Earth Technology Corporation, May 1991*

Upon completion of the project, EMCON held a meeting with the Gila River Indian Community on 28 February 1992 to discuss work completed and issues related to long-term care and maintenance of the site.<sup>14</sup> The Former Arizona Tanning Company facility has remained an abandoned industrial site since 1992.

### **Discussion**

In 2006, the Gila River Indian Community contracted N. Weiss and Associates (NWA) to conduct a Phase I Environmental Site Assessment of the former Arizona Tanning Company facility located at the Santan Industrial Park. As part of this assessment, NWA documented the condition of the tannery's processing/storage building. In addition, NWA also provided an assessment of the condition of the former surface waste water impoundment area and the landfill (Pond 2). NWA's assessment report was submitted to

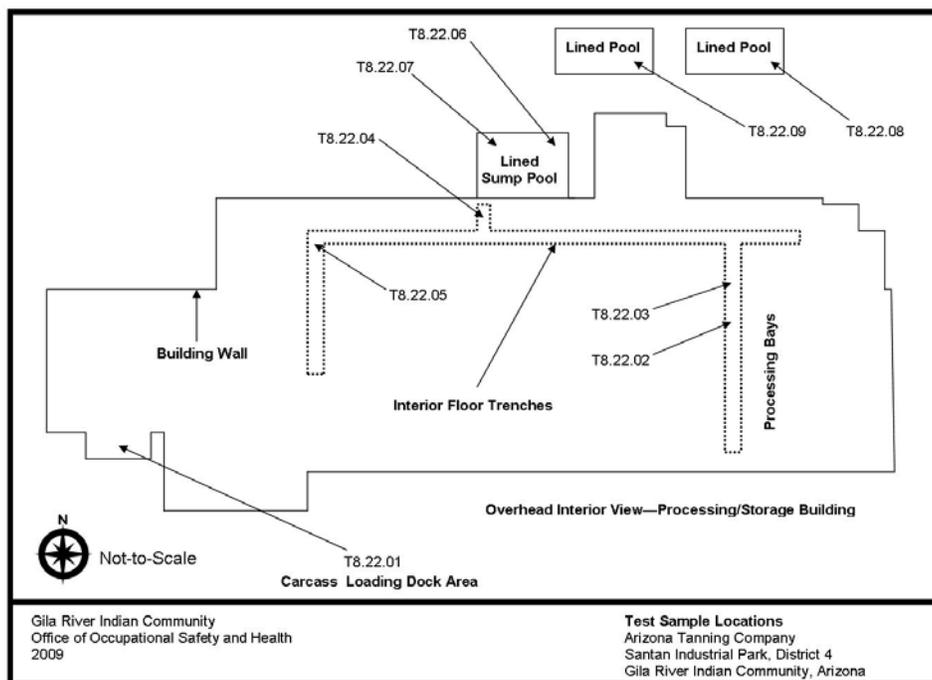
the Gila River Indian Community in September 2006.<sup>15</sup> According to the 2006 NWA report, the tannery's processing/storage building was intact but in severe disrepair. NWA made observations regarding damage to the roof and significant structural debris within the building. These findings were consistent with observations made by OSH staff during a site inspection of the facility on 04 March 2009. However, during the OSH site inspection it was evident that the building had undergone significant degradation since 2006. This was evidenced by the proliferation of graffiti and structural damage to the building. Several large industrial components noted by NWA in 2006 (i.e., industrial grade boiler and water heater) were missing at the time OSH conducted their site inspection.<sup>16</sup> The building is accessible to trespassers due to the isolated location of the site and the lack of a security fence.

NWA also assessed the condition of the surface waste water impoundment area and landfill. In their report, NWA reported no noticeable alterations to the former surface waste water impoundment area or damage to the landfill (Pond 2). This was also confirmed by OSH staff who, at the time of their site inspection, observed no noticeable alterations or damage to the waste water impoundment area or landfill. OSH staff did however note that the waste water impoundment area has yielded only a minimal amount of native flora since its closure in 1992. In addition, it was also noted that livestock and all terrain vehicles (ATVs) have created paths (trails) across the northern portion of the impoundment area.

Later in 2006 Speyer and Associates was contracted by GRIC to carry out a limited Phase II Site Assessment of the Arizona Tanning Company's facility.<sup>17</sup> According to Speyer and Associates, the GRIC Department of Environmental Quality requested that locations within the building be sampled and tested for chemical pollutants where contaminants may have accumulated or pooled. Based on this guidance, the drainage system was selected by Speyer and Associates. The building's drainage system consists of: 1. The interior floor trenches; 2. One (1) exterior sump collection pool; and 3. Two (2) exterior lined pools.

Speyer and Associates collected nine (9) samples from the building's drainage system. Eight of the samples were directly related to waste water with the exception of one (Sample T8.22.01). Sample T8.22.01 was a soil sample taken from the carcass loading dock area (Figure 3.). From the data, it was determined that high concentrations of total chromium are present within the interior floor trenches. The highest concentration of total chromium was 88000 mg/kg (Sample #T8.22.02). Sample locations where the highest concentrations of total chromium were identified are Samples T8.22.02, T8.22.03, and T8.22.04 (Figure 3.). These samples were taken from the interior floor trenches that once received waste water from the processing bays.<sup>18</sup>

**Figure 3.**  
**Speyer and Associates**  
**Test Sample Locations for Priority Pollutant Metals**  
**Processing/Storage Building Drainage System**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**



In addition, hexavalent chromium ( $\text{Cr}^{+6}$ ) was detected in Sample T8.22.04. The concentration of  $\text{Cr}^{+6}$  in Sample T8.22.04 was 15mg/kg. Moreover, Speyer and Associates also stated that the presence of  $\text{Cr}^{+6}$  and other pollutant metals found present at the site suggests that elevated concentrations of these metals could have been discharged to one or more of the surface waste water impoundments during Arizona Tanning Company’s operational period (Table 2.).<sup>19</sup>

Due to the presence of pollutant metals at the site, Speyer and Associates made recommendations concerning mitigating their potential impact. In their 2006 report Speyer and Associates state, “...metal-rich solutions and sludges may have accumulated in the process area trenches located on the interior of the building and been transmitted to holding ponds and ultimately to one (1) or more impoundment ponds located around the subject property. Such discharges over time may have impacted subsurface soils and/or groundwater.”<sup>20</sup> To monitor for groundwater contamination, Speyer and Associates recommended that three (3) monitoring wells be installed around the outside perimeter of the surface waste water impoundment area. These monitoring wells would allow the GRIC Department of Environmental Quality to identify if historic activities at the site had impacted the groundwater located in the area. Moreover, the presence of these wells would also allow for the continuous tracking of groundwater conditions at the site.<sup>21</sup>

**Table 2.**  
**Speyer and Associates**  
**Summary of Analytical Results**  
**Priority Pollutant Metals<sup>†</sup>**  
**Processing/Storage Building Drainage System**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**

<b>Sample<sup>††</sup></b>	<b>pH</b>	<b>Sb</b>	<b>Ba</b>	<b>Cr</b>	<b>Cr<sup>+6</sup></b>	<b>Cu</b>	<b>Hg</b>	<b>Pb</b>	<b>Ni</b>	<b>Zn</b>
<b>T8.22.01</b>	8.3	<5.0	39	96	<1.0	30	<0.10	34	11	79
<b>T8.22.02</b>	7.3	1800	<500	<b>88000</b>	<1.0	<500	<0.50	<500	<200	<1000
<b>T8.22.03</b>	6.3	530	<500	<b>25000</b>	<2.0	<500	2.0	<500	<200	<1000
<b>T8.22.04</b>	8.1	520	<500	<b>25000</b>	<b>15</b>	520	1.2	<500	210	1100
<b>T8.22.05</b>	7.8	<500	<500	540	<5.0	<500	2.2	<500	<200	2600
<b>T8.22.06</b>	7.8	<0.040	0.029	0.030	<0.010	<0.010	<0.00020	<0.015	<0.010	<0.050
<b>T8.22.07</b>	7.8	<0.040	0.032	0.033	<0.010	<0.010	<0.00020	<0.015	<0.010	<0.050
<b>T8.22.08</b>	8.7	<0.040	0.26	<0.010	<0.010	<0.010	<0.00020	<0.015	<0.010	<0.050
<b>T8.22.09</b>	8.4	<0.040	0.26	<0.010	<0.010	<0.010	<0.00020	<0.015	<0.010	<0.050

**Sb** – Antimony, **Ba** – Beryllium **Cr** – Total Chromium, **Cr<sup>+6</sup>** – Hexavalent Chromium, **Cu** – Copper **Hg** – Mercury, **Pb** – Lead, **Ni** – Nickel, **Zn** – Zinc

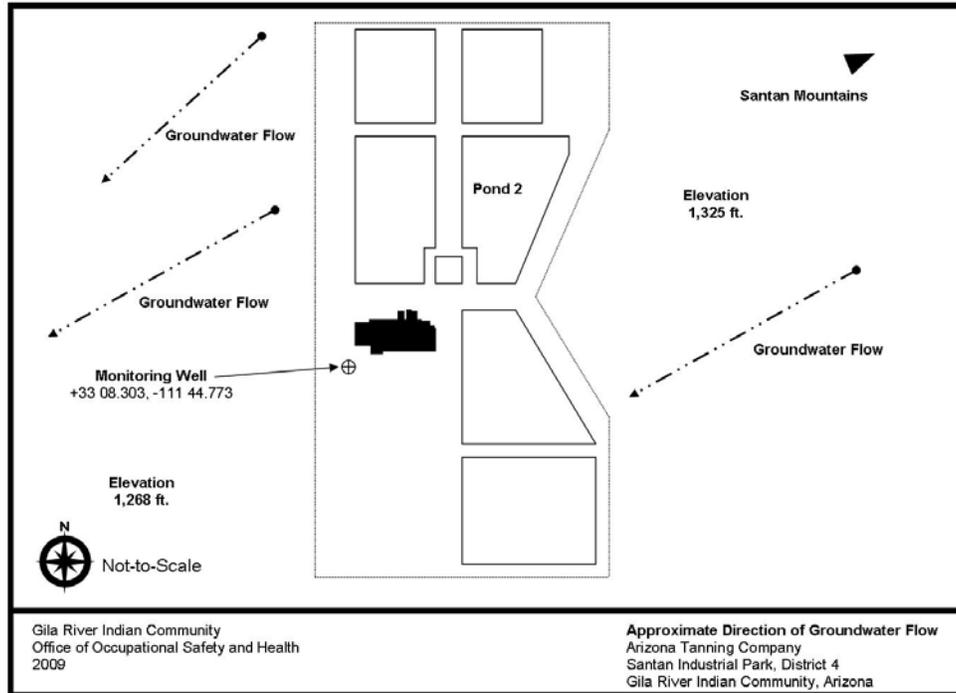
<sup>†</sup> Pollutant metals not shown were below detection limits.

<sup>††</sup> Samples T8.22.01, .02, .03, .04, and .05 (Soil, Sludge) are measured in mg/kg. Samples T8.22.06, .07, .08, and .09 (Water) are measured in mg/L.

### ***Groundwater Testing***

In July 2008 Speyer and Associates was contracted by the Gila River Indian Community's Department of Environmental Quality to drill and install a monitoring well at the Former Arizona Tanning Company Site. Although Speyer and Associates recommended in 2006 that three (3) monitoring wells be installed; only one (1) was installed at the site in 2008. The monitoring well at the site is located approximately 728ft. southwest from Pond 2 (Figure 4.). The southwestern portion of the property was chosen by Speyer and Associates based on hydrogeologic information with respect to groundwater flow in the area.<sup>22</sup> A report produced by the U.S. Geological Survey (USGS) in 1991 supports Speyer and Associates decision to place the monitoring well at a position southwest of the surface waste water impoundment area. Based on USGS studies of the Gila River Indian Community, groundwater along the western base of the Santan Mountains maintains a southwestern flow toward the Gila River. This is due to the hydraulic head gradient beginning at the western base of the Santan Mountains leading southwest to the Gila River. In addition, the hydraulic conductivity of the groundwater located at the site is oriented southwest (Appendix F).<sup>23</sup>

**Figure 4.**  
**Approximate Direction of Groundwater Flow**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**



Two separate monitoring well samples were taken by Speyer and Associates in 2008. The first sample was taken on 01 August 2008, immediately after construction of the monitoring well. Following a review of the initial sample results, Speyer and Associates determined that a second analysis was needed in order to obtain a better representation of ambient groundwater conditions. The second sample was taken on 09 September 2008.

Findings from the 01 August 2008 sample initially showed the presence of arsenic and chromium (total) at concentrations above the EPA Maximum Contaminant Level (MCL) for each analyte/metal. However during the analytical testing process, Columbia Analytical Services (laboratory services utilized by Speyer and Associates) reported that color interferences resulted in inaccurate results for Cr<sup>+6</sup>. This problem was the primary reason for initiating the extraction of a second sample on 09 September 2008.

The second sample taken in September 2008 by Speyer and Associates did not show any Priority Pollutant Metals at concentrations above EPA MCLs for drinking water. Speyer and Associates state, “no evidence exists to indicate that past or current activities at the Former Arizona Tanning Company Site have contributed to the condition of groundwater beneath the site.”<sup>24</sup> Notwithstanding, Speyer and Associates also state that “analytical results from both tests indicate that the condition of groundwater beneath the site is not suitable for drinking without specific blending or treatment to reduce the concentration of metals, specifically arsenic and total chromium.”<sup>25</sup>

**Table 3**  
**Speyer and Associates**  
**Water Sample Results (mg/L)**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**

Analyte/Metal	Sample Date 08 01-08	Sample Date 09-08-08	EPA MCL (mg/L)
Chromium (Total)	0.14 <sup>†</sup>	<0.010	0.1
Hexavalent Chromium (Cr <sup>+6</sup> )	0.012 <sup>††</sup>	<0.010/<0.0020 <sup>†††</sup>	*(NA)

<sup>†</sup>EPA Method SM3500-Cr D

<sup>††</sup>EPA Method SM4500-Cr D

<sup>†††</sup>EPA Method SM3500-CrD/EPA Method 7199

\*(NA) = No EPA MCL for Cr<sup>+6</sup>

***Asbestos Testing***

In April 2009 the Arizona Tanning Company’s Processing/Storage Building was destroyed as a result of an arson fire. Due to its age and damage caused by the fire, the structural integrity of the building was called into question by the Gila River Indian Community. As part of an effort to assess the post-fire condition of the building, the Gila River Indian Community’s Department of Environmental Quality contracted Adams and Wendt, Inc. (AWI) to conduct a comprehensive asbestos inspection.

On 07 July 2009, AWI collected bulk samples from the Former Arizona Tanning Company Processing/Storage Building. Of the materials sampled by AWI, three (3) were found to contain >1% asbestos by Polarized Light Microscopy (PLM ) laboratory analysis (Table 4.). Due to the presence of asbestos in the building, AWI recommended that asbestos containing materials be removed by a licensed asbestos abatement contractor.<sup>26</sup>

**Table 4.**  
**Adams and Wendt, Inc.**  
**Asbestos Test Results for 07 July 2009**  
**Processing/Storage Building**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**

Sample No.	Material	Estimated Area	Percent Asbestos	NESHAP Classification	Material Locations
05-A	Roofing Material	1,500 S.F.	30% Chrysotile	RACM	West Portion of Structure
07-B	Floor Tile	200 S.F.	10% Chrysotile	Category I Non-Friable	Exterior Structure, East and Center
10-A	Roofing Material	5,000 S.F.	65% Chrysotile	RACM	East Portion of Structure

***Physical Hazards***

Numerous physical hazards are present at the site. These include sharp objects, unstable walls/iron supports, fall and drowning hazards. The 2009 site inspection conducted by OSH staff revealed one 9 ft drop into a confined space (Appendix L). In addition, the lined sump pool located on the north exterior wall of the building (approximately 8 ft. in depth) was filled to capacity with rainwater at the time of inspection (Appendix M).

***Site Unknowns***

There are several unknown factors with respect to the Former Arizona Tanning Company site. The Limited Phase II Environmental Site Assessment Report completed by Speyer and Associates in 2006 pointed out that elevated concentrations of chromium and other pollutant metals found present at the site could have been discharged to one or more of the surface waste water impoundments during Arizona Tanning Company's operational period. To date, soil found in the former surface waste water impoundment area and surface soil surrounding the main processing/storage building has not been fully characterized. In addition, no sampling has been conducted to characterize the sludge buried in the landfill (Pond #2) for the presence of hexavalent chromium (Cr<sup>+6</sup>). Based on this lack of environmental data, it is not known if the sampling results reported by Speyer and Associates in 2006 are representative of soil found in the surface waste water impoundment area and soil surrounding the main processing/storage building. Moreover, the location of an onsite sludge disposal unit used during Arizona Tanning Company's operational period is unknown.<sup>27</sup>

Questions still remain concerning the condition of groundwater found in the area. In 2006 Speyer and Associates recommended drilling and installation of, at least, three (3) monitoring wells around the perimeter of the surface waste water impoundment area.

However, in 2008 Speyer and Associates was contracted to install one (1) monitoring well at the Former Arizona Tanning Company site. This monitoring well is located approximately 728 ft. southwest from Pond #2. Although the well is located down gradient from the surface waste water impoundment area, it is unknown if water samples taken from this well provide the best representative sample of ground water conditions at the site. Test results taken on 09 September 2008 did not shown any Priority Pollutant Metals at concentrations exceeding EPA MCLs for drinking water. Notwithstanding, Speyer and Associates concluded that groundwater beneath the site is not suitable for drinking without specific blending or treatment to reduce the concentration of metals; specifically arsenic and total chromium.

### **Exposure Pathway Evaluation**

There five elements considered in the evaluation of an exposure pathway. The five elements are: 1. A source of contamination; 2. Transportation through an environmental medium (e.g., water); 3. A point of exposure; 4. Route of exposure; and 5. A receptor population. Exposure pathways are classified as completed, potential or eliminated. A completed exposure pathway exists when these five elements are present and indicate that exposure to a contaminant has occurred in the past and/or is occurring. A potential pathway is one that may have occurred in the past or present, or could occur in the future. Completed and potential pathways, however, may be eliminated when they are unlikely to be significant.

An exposure pathway for ingesting chromium-contaminated groundwater from the Former Arizona Tanning Company Site is currently eliminated (Table 5.). For example, a 2008 water sample taken from the monitoring well located at the site did not shown any Priority Pollutant Metals at concentrations above EPA MCLs for drinking water. The chromium concentration reported for the 09 September 2008 sample was <0.010 mg/L (EPA MCL for chromium is currently set at 0.1 mg/L). Moreover, USGS geologic trend analysis for the Gila River Basin show dissolved chromium (total chromium) naturally occurring at concentrations <0.1 mg/L with no upward trend.<sup>28</sup>

Located within a one-mile radius of the Santan Industrial Park are situated approximately fifty (50) Gila River Indian Community homes (Appendix G). Presently these homes are supplied by a Gila River Indian Community public water source. The two well-heads supplying these homes are located approximately 5.91 miles northwest and 3.91 miles southeast from the Santan Industrial Park. Both well-heads are located outside of the hydraulic head gradient originating from the western base of the Santan Mountains. In addition, drinking water quality tests conducted by the Gila River Indian Community's Department of Public Works (1997 to 2008) show total chromium consistently <0.1 mg/L.<sup>29</sup>

**Table 5.**  
**Chromium Exposure Pathway**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**

Source	Contaminant of Concern	Environmental Media	Route of Exposure	Estimated Population	Exposure Pathway
Arizona Tanning Company	Chromium	Water	Ingestion	200	Eliminated

Nevertheless a potential exposure pathway exists for Asbestos (Table 6.) As stated earlier, results from a 2009 asbestos inspection identified the presence of chrysotile asbestos building materials located within the processing/storage building. The completion of the exposure pathway is supported by evidence of trespassers entering the building. OSH staff documented increasing numbers of intermittent trespassers during follow-up visits to the site.

**Table 6.**  
**Asbestos Exposure Pathway**  
**Arizona Tanning Company, Santan Industrial Park**  
**Gila River Indian Community, Arizona**

Source	Contaminant of Concern	Environmental Media	Route of Exposure	Estimated Population	Exposure Pathway
Arizona Tanning Company	Asbestos	Air	Inhalation	>50	Completed

### Health Effects Evaluation

Although chromium remains as the contaminant of concern for this health consultation, particular attention must be focused upon addressing the issue of asbestos found within the processing/storage building. Health based comparisons could not be utilized to determine the health risk to individuals entering the building. This is due to the limiting factors presented by the sampling method used to determine the presence of asbestos.

Asbestos testing conducted at the site were limited to bulk samples of materials that make up flooring and roofing material. No air sampling was conducted as part of the asbestos inspection. Due to the fire which took place in 2009, building materials are now in a highly friable state which facilitates the release of airborne asbestos fibers.

## **Community Health Considerations**

The Office of Occupational Safety and Health (OSH) and ATSDR's top priority is to ensure that the Gila River Indian Community has the best information possible to safeguard its health. Since its closure in 1992, the Former Arizona Tanning Company Site has been a health concern to the Gila River Indian Community. In 2009, after an arson fire destroyed the Arizona Tanning Company's processing/storage building, members of the Gila River Indian Community questioned if chromium once used by the Arizona Tanning Company has negatively impacted the quality of drinking water surrounding the site. All data analyzed in this Health Consultation was researched and reviewed by the Office of Occupational Safety and Health in an attempt to characterize the nature and degree of health risk to the Gila River Indian Community.

In addition, OSH and ATSDR recognizes that unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination of their water, soil, air or food. Children are at greater risk than adults from certain exposures to hazardous substances because they play outdoors and have more hand-to-mouth behavior. Also, children are the most sensitive receptors of environmental contamination because they are smaller than adults and often receive higher doses of chemical exposure proportional to their body weight.

## **Conclusions**

Based on historic and current data pertaining to the Former Arizona Tanning Company Site, the Office of Occupational Safety and Health and ATSDR reached four important conclusions as part of this Health Consultation:

### ***Conclusion 1***

The Office of Occupational Safety and Health (OSH) and ATSDR conclude that drinking chromium found in groundwater at the Arizona Tanning Company Site is not expected to harm people's health. The reason for this conclusion is based on analytical results for groundwater located at the site. On 09 September 2008, a water sample was taken from a monitoring well located at the site. The chromium concentration reported for the 09 September 2008 sample was <0.010 mg/L (EPA MCL for chromium is currently set at 0.1 mg/L). Moreover, located within a one-mile radius of the Santan Industrial Park are situated approximately fifty (50) Gila River Indian Community homes. Presently these homes are supplied by a Gila River Indian Community public water source. The two well-heads supplying these homes are located approximately 5.91 miles northwest and 3.91 miles southeast from the Santan Industrial Park. Both well heads are located outside of the hydraulic head gradient originating from the western base of the Santan Mountains. In addition, drinking water quality tests conducted by the Gila River Indian Community's Department of Public Works (1997 to 2008) show total chromium consistently <0.1 mg/L.

### ***Conclusion 2***

The Office of Occupational Safety and Health (OSH) and ATSDR cannot currently conclude if ingesting chromium-contaminated soil found at the Former Arizona Tanning Company Site could harm people's health. The reason for this conclusion is based on the fact soil found in the former surface waste water impoundment area and surface soil surrounding the main processing/storage building has not been fully characterized. In addition, no sampling has been conducted to characterize the sludge buried in the landfill (Pond #2) for the presence of hexavalent chromium (Cr<sup>+6</sup>). Based on this lack of environmental data, it is not known if the sampling results reported by Speyer and Associates in 2006 are representative of soil found in the surface waste water impoundment area and soil surrounding the main processing/storage building. Moreover, the location of an onsite sludge disposal unit used during Arizona Tanning Company's operational period is unknown. The data needed to make a decision regarding ingesting chromium-contaminated soil found at the Former Arizona Tanning Company Site is not available. OSH and ATSDR will work closely with the Gila River Indian Community's Department of Environmental Quality (DEQ) to gather needed soil sample data.

### ***Conclusion 3***

The Office of Occupational Safety and Health (OSH) and ATSDR conclude that breathing asbestos found inside of the processing/storage building due to an arson fire which occurred in April 2009 at the Former Arizona Tanning Company Site could harm people's health therefore it is a ***Public Health Hazard***. The reason for this conclusion is based on environmental testing conducted at the site on 07 July 2009. Environmental testing revealed the presence of building materials (roofing material and floor tiling) containing >1% asbestos by Polarized Light Microscopy (PLM ) laboratory analysis inside of the processing/storage building. Due to the fire which took place in 2009, building materials are now in a highly friable state which facilitates the release of airborne asbestos fibers. Asbestos is a known human carcinogen (cancer causing agent).

### ***Conclusion 4***

The Office of Occupational Safety and Health (OSH) and ATSDR conclude that physical hazards found at the Former Arizona Tanning Company Site could result in severe bodily injury and/or death therefore it is an ***Urgent Public Health Hazard***. Located at the site are found numerous physical hazards. These include sharp objects, unstable walls/iron supports, fall and drowning hazards. The 2009 site inspection conducted by OSH staff revealed one 9 ft drop into a confined space. In addition, the lined sump pool located on the north exterior wall of the building (approximately 8 ft. in depth) was filled to capacity with rainwater at the time of inspection.

## **Recommendations**

Based on Gila River Indian Community's, Office of Occupational Safety and Health (OSH) and ATSDR's review of concerns expressed by Community members and environmental data, the following recommendations are appropriate and protective of the health of individuals who are accessing the site. The Gila River Indian Community should:

- Post signs at the site warning about the presence of asbestos and chromium. Currently, warning signs only provide information regarding trespassing.
- Prevent access to the site. The site continues to remain accessible to trespassers. Site inspections conducted by OSH staff have provided evidence of continued activity at the site (i.e., graffiti, salvaging).
- Abate fall and drowning hazards. Due to evidence of continued human activity at the site. There is a pressing need to abate the potential for severe bodily injury and/or death due to fall and drowning hazards at the site.
- Abate asbestos at the site per recommendations from external consultants Adams and Wendt, Inc. – Project Number 0907202. Due to evidence of continued human activity at the site, there is an urgent need for asbestos abatement. Due to the carcinogenic nature of asbestos, immediate action is required to protect the Community.
- Extract an additional water sample from the monitoring well located at the site. The condition of the groundwater should be re-evaluated. Two additional monitoring wells should be considered per recommendations made by Speyer and Associates in 2006.
- Extract a core sample from the landfill (Pond #2) to characterize the sludge. Specifically, determine the level and condition of chromium present in the sludge.
- Conduct soil sample tests. Soil found in the surface waste water impoundment area and soil surrounding the main processing/storage building need to be evaluated for the presence of chromium.



## **Public Health Action Plan**

The following actions have been carried out to address the physical hazards at the site:

1. On 24 June 2009, Health Assessor Manuel Fontes and Principle Investigator Randall Lange attended a special meeting at the request of the GRIC Department of Economic Development and the Santan Industrial Board. This meeting was called for the purpose of discussing the condition of the Former Arizona Tanning Company facility. GRIC Department representatives in attendance included: Fire and Police, Environmental Quality (DEQ), Public Health (Environmental Health Program), Public Works, Transportation and GRIC Council Members. During the meeting, an in depth discussion was held concerning damage to the tannery's processing/storage building due to an arson fire which occurred in June 2009. Health Assessor Manuel Fontes and Principle Investigator Randall Lange provided a brief presentation regarding physical hazards at the site and the need to prevent unauthorized entry.
2. During the 24 June 2009 meeting called by the GRIC Department of Economic Development and the Santan Industrial Board a request was made that Health Assessor Manuel Fontes develop a fact sheet identifying health and safety hazards found at the site. A fact sheet was developed and submitted to Mr. Robin Fohrenkam, Director of the GRIC Department of Economic Development on 25 June 2009 (Attachment N). Mr. Fohrenkam sent an email to Health Assessor Manuel Fontes on 08 July 2009 acknowledging receipt of the fact sheet.
3. On 09 October 2009, Mr. Dale Anderson with the GRIC Department of Environmental Quality (DEQ) sent an email to Health Assessor Manuel Fontes requesting to utilize a draft version of the Arizona Tanning Company Health Consultation Report to apply for U.S. EPA Brownsfield Grant funds to abate asbestos and physical hazards at the site. A draft version of the Arizona Tanning Company Health Consultation Report was released to Mr. Anderson on 09 October 2009. DEQ submitted a Brownsfield application to the U.S. EPA in 2009. The GRIC DEQ Brownsfield application utilized findings from a draft version of the Arizona Tanning Company Health Consultation Report to support its funding request.

The Gila River Indian Community, Office of Occupational Safety and Health (OSH) will carry out the following as part of the Public Health Action Plan for this site.

- Provide an advisory sheet to the Gila River Indian Community regarding asbestos and physical hazard found at the site; Specifically Community members living in Districts 3 and 4.
- Continue to work with the Gila River Indian Community, Department of Environmental Quality (DEQ), Santan Industrial Board, and Office of Economic Development to abate asbestos and physical hazards found at the site.
- Provide results from this Health Consultation to the Gila River Indian Community; specifically Community members living in Districts 3 and 4.
- Continue to work closely with the Gila River Department of Environmental Quality to monitor the site.
- Update this Health Consultation if new environmental data pertaining to the site indicates a risk to the health of the Community.

#### **For More Information**

If you have any concerns about your health, as it relates to chromium or asbestos, you should contact your health care provider. You can also call the Gila River Indian Community, Office of Occupational Safety and Health (OSH) and ask for information on the Former Arizona Tanning Company Site, Santan Industrial Park, Gila River Indian Community, Arizona.

## References

- <sup>1</sup> United States Bureau of Indian Affairs, Information Profiles of Indian Reservations in Arizona, Nevada, and Utah. (Phoenix Area Office, 1978) 37.
- <sup>2</sup> United States Bureau of Indian Affairs, Information Profiles of Indian Reservations in Arizona, Nevada, and Utah. (Phoenix Area Office, July 1970) 31.
- <sup>3</sup> United States Environmental Protection Agency, National Enforcement Investigations Center, Remote Sensing Investigation Solid/Liquid Waste Disposal Sites, Arizona, Volume 1, EPA-3301-80-002-1, May 1980.
- <sup>4</sup> EMCON Associates, Letter to Mrs. Bernadine Evans, Arizona Tanning Company, Tannery Row Properties, Napa, California, Ref: Site Closure Proposal, Arizona Tanning Company Facility, Sacaton, Arizona. 11 November 1991.
- <sup>5</sup> N. Weiss Associates, Inc., Phase I Environmental Site Assessment and Limited Phase II Assessment Former Arizona Tanning Company (N. Weiss Associates, Inc., P.O. Box 71790, Phoenix, Arizona, September 2006) 10.
- <sup>6</sup> United States Environmental Protection Agency, “9.15 Leather Tanning: General.” Food and Agricultural Industry. June 1997 <<http://www.epa.gov/ttnchie1/ap42/ch09/final/c9s15.pdf>>.
- <sup>7</sup> N. Weiss Associates, Inc., Phase I Environmental Site Assessment: Arizona Tanning Company, (September 2006) 20.
- <sup>8</sup> N. Weiss Associates, Inc., Phase I Environmental Site Assessment: Arizona Tanning Company, (September 2006) 27.
- <sup>9</sup> United States Environmental Protection Agency, “9.15 Leather Tanning: General.” June 1997 <<http://www.epa.gov/ttnchie1/ap42/ch09/final/c9s15.pdf>>.
- <sup>10</sup> N. Weiss Associates, Inc., Phase I Environmental Site Assessment: Arizona Tanning Company, (September 2006) 27.
- <sup>11</sup> Vincent Van den Bossche, Gérard Garard and Marie-Joëlle Brun (CTC – Centre Technique Cuir Chaussure Maroquinerie), Lyon, France, “Chromium Tanned Leather

and its Environmental Impact,” The Chromium File, International Chromium Development Association 4 (1997): 1-2.

<sup>12</sup> Richard Rupert and Eugene S. Cetwinski, Letter to Mrs. Bernadine Evans, Arizona Tanning Company, Tannery Row Properties, Ref: Arizona Tanning Company, Site Closure Proposal From EMCON Associates. Proposal P91X-008, 11 November 1991.

<sup>13</sup> EMCON Associates, Letter to Mrs. Bernadine Evans, Arizona Tanning Company, 11 November 1991.

<sup>14</sup> Norman L. Weiss and Eugene S. Cetwinski, Letter to Mrs. Bernadine Evans, Arizona Tanning Company, Tannery Row Properties, Ref: Site Closure Completion From EMCON Associates. Project H75-01.01, 18 March 1992.

<sup>15</sup> N. Weiss Associates, Inc., Phase I Environmental Site Assessment: Arizona Tanning Company, (September 2006).

<sup>16</sup> Weiss Associates, Inc., Phase I Environmental Site Assessment: Arizona Tanning Company, (September 2006) 24.

<sup>17</sup> Speyer and Associates, Limited Phase II Environmental Site Assessment: Former Tannery Facility and Property, (Speyer and Associates, P.C., Project No. 2006.004.27.01, 2006).

<sup>18</sup> Speyer and Associates, Limited Phase II Environmental Site Assessment: Former Tannery Facility and Property, (2006) 3-5.

<sup>19</sup> Speyer and Associates, Limited Phase II Environmental Site Assessment: Former Tannery Facility and Property, (2006) 6.

<sup>20</sup> Speyer and Associates, Limited Phase II Environmental Site Assessment: Former Tannery Facility and Property, (2006) 7.

<sup>22</sup> Speyer and Associates, Monitoring Well Installation and Groundwater Sampling: Former Tannery Facility Property, (Speyer and Associates, 3567 E. Harvard Court, Gilbert, Arizona, September 2008) 1-2.

<sup>23</sup> B.W. Thomsen and J.H. Eychaner, Predevelopment Hydrology of the Gila River Indian Reservation, South-Central Arizona. United States Geological Survey, Prepared in Cooperation with the United States Bureau of Indian Affairs, Tucson, Arizona, June 1991.

<sup>24</sup> Speyer and Associates, Monitoring Well Installation and Groundwater Sampling: Former Tannery Facility Property, (September 2008) 4.

<sup>25</sup>Speyer and Associates, Monitoring Well Installation and Groundwater Sampling: Former Tannery Facility Property, (September 2008) 4.

<sup>26</sup> Adams and Wendt, Inc., Comprehensive Asbestos Inspection Report of Findings for Arizona Tannery: Sacaton, Arizona, (Adams and Wendt, Inc., Project Number 0907202, 461 North Gilbert Road, Suite 1, Mesa, Arizona 85203, 14 July 2009).

<sup>27</sup>N. Weiss Associates, Inc., Phase I Environmental Site Assessment: Arizona Tanning Company, (September 2006) 20.

<sup>28</sup>U.S. Geological Survey, Summary Statistics and Trend Analysis of Water-Quality Data at Sites in the Gila River Basin: New Mexico and Arizona. U.S. Geological Survey Water-Resources Investigations Report 95 – 40833, Tucson, Arizona, 1995.

<sup>29</sup>Gila River Indian Community, Chromium Results: Stotonic Area 1/97 – 12/08. Department of Public Works, August 2009.



## **Preparers of Report**

### ***Author***

Manuel M. Fontes, R.S.  
Health Assessor  
Gila River Indian Community  
Office of Occupational Safety and Health

### ***Reviewer***

Randal Lange, C.S.P., R.P.I.H., M.B.A.  
Principle Investigator  
Gila River Indian Community  
Office of Occupational Safety and Health



### Certification

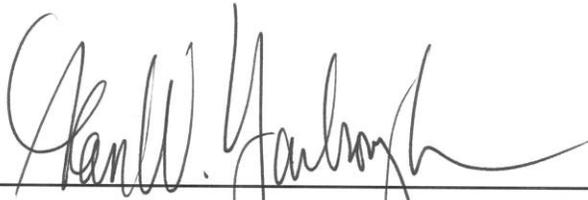
This Former Arizona Tanning Company Site Health Consultation was prepared by the Gila River Indian Community, Office of Occupational Safety and Health (OSH), under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It is in accordance with approved methodology and procedures existing at the time the exposure investigation report begun.



---

Charisse Walcott  
Technical Project Officer  
CAT, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation and concurs with the findings.

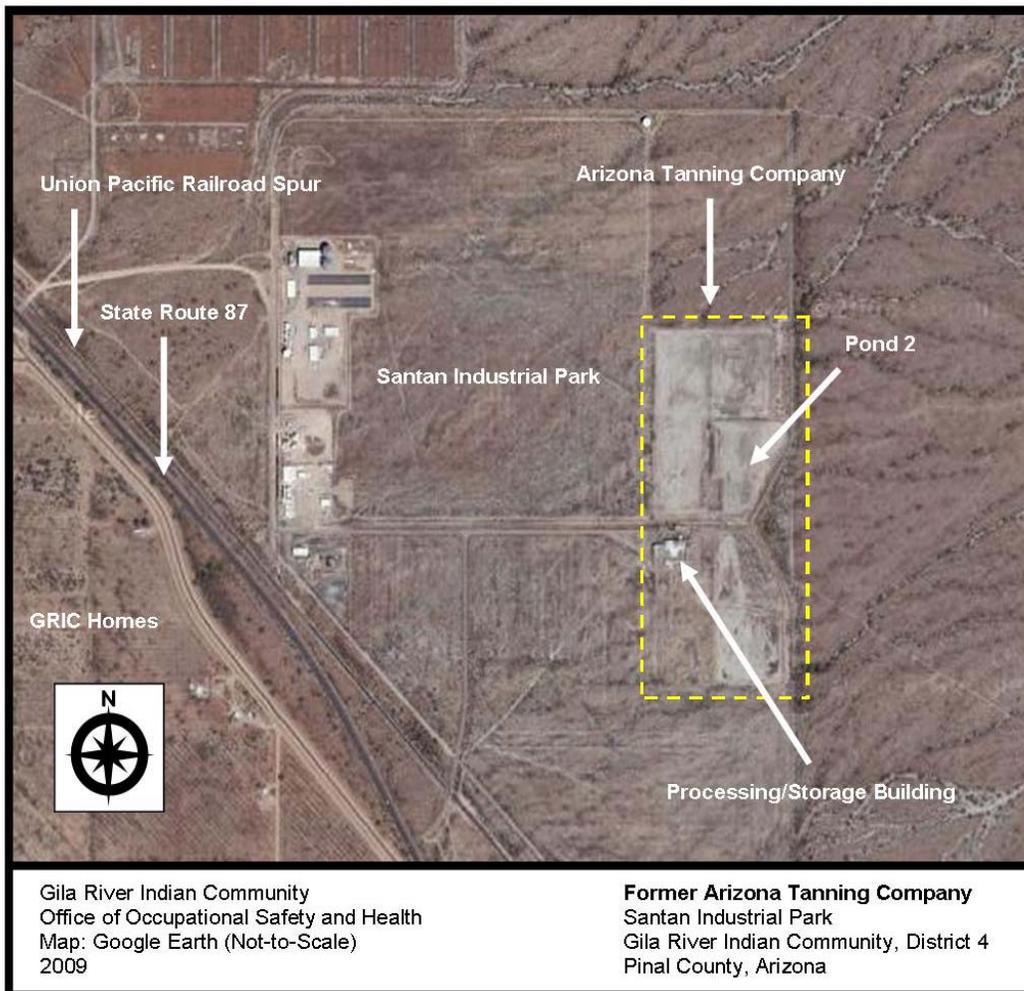


---

Alan Yarbrough  
Team Leader-Cooperative Agreement Program  
CAT, CAPEB, DHAC, ATSDR

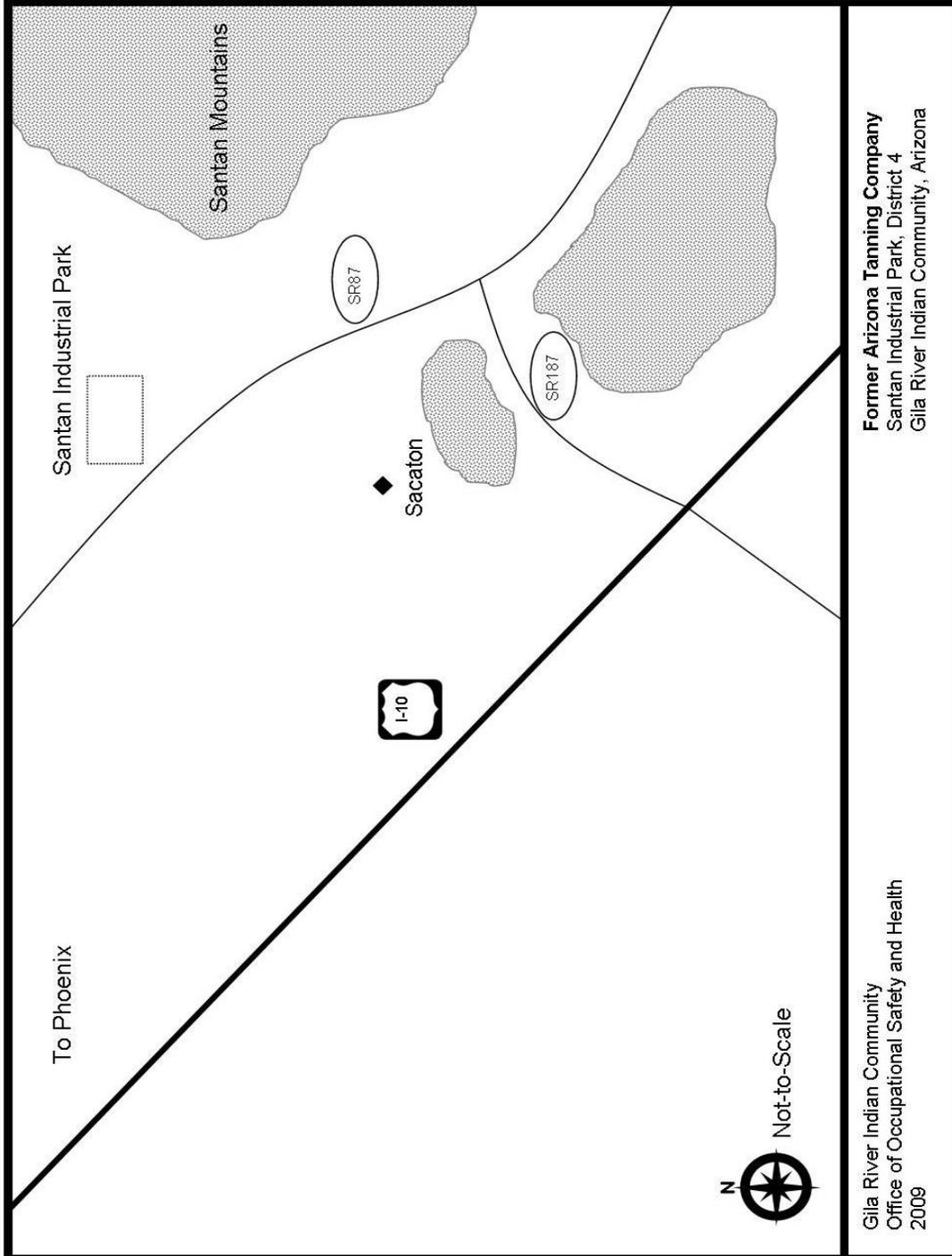


**Appendix A**  
**Arial Photograph of Former Arizona Tanning Company Site**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**



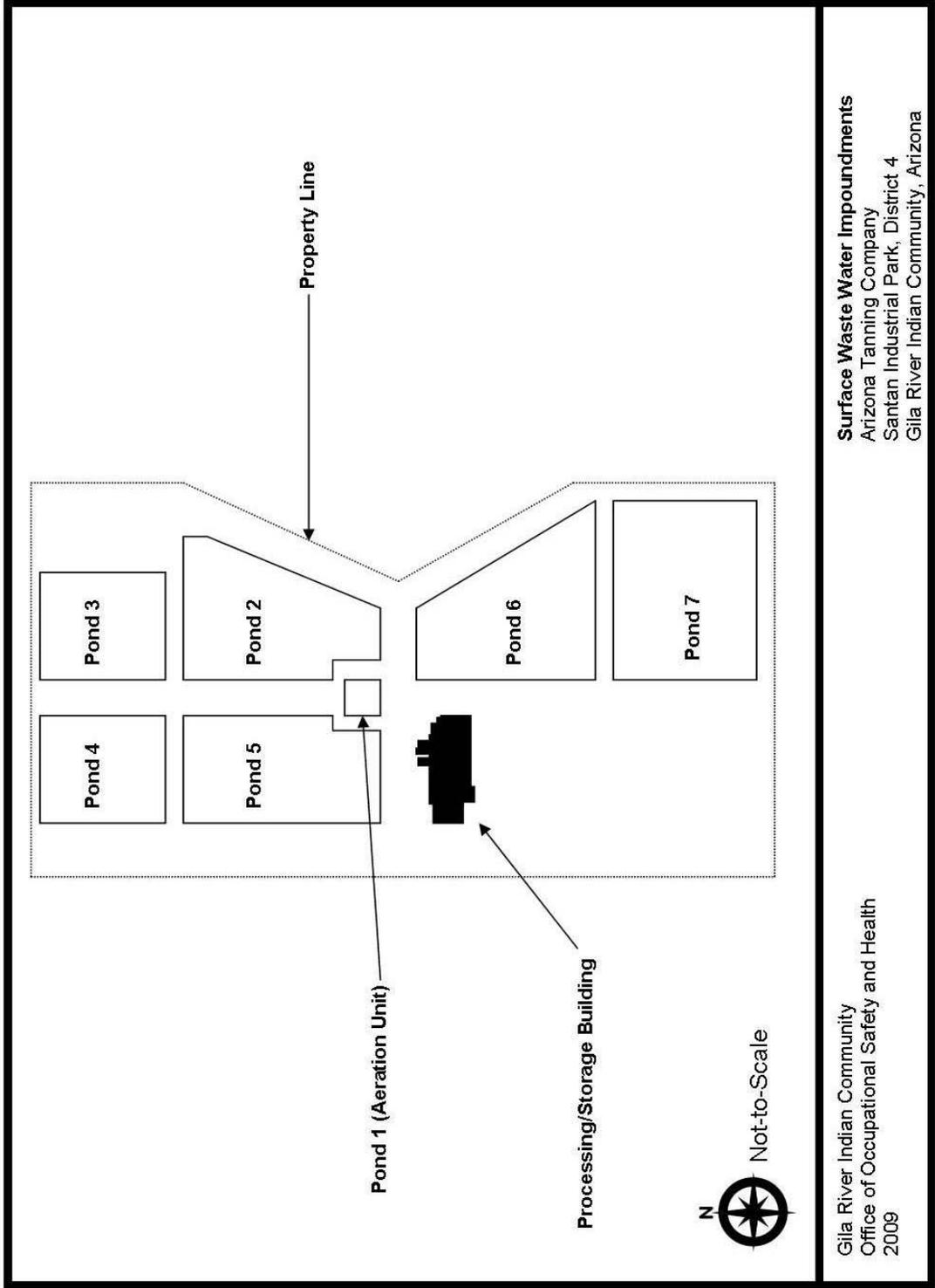


**Appendix B**  
**Location of Former Arizona Tanning Company**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**





**Appendix C**  
**Arizona Tanning Company Surface Waste Water Impoundments**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**

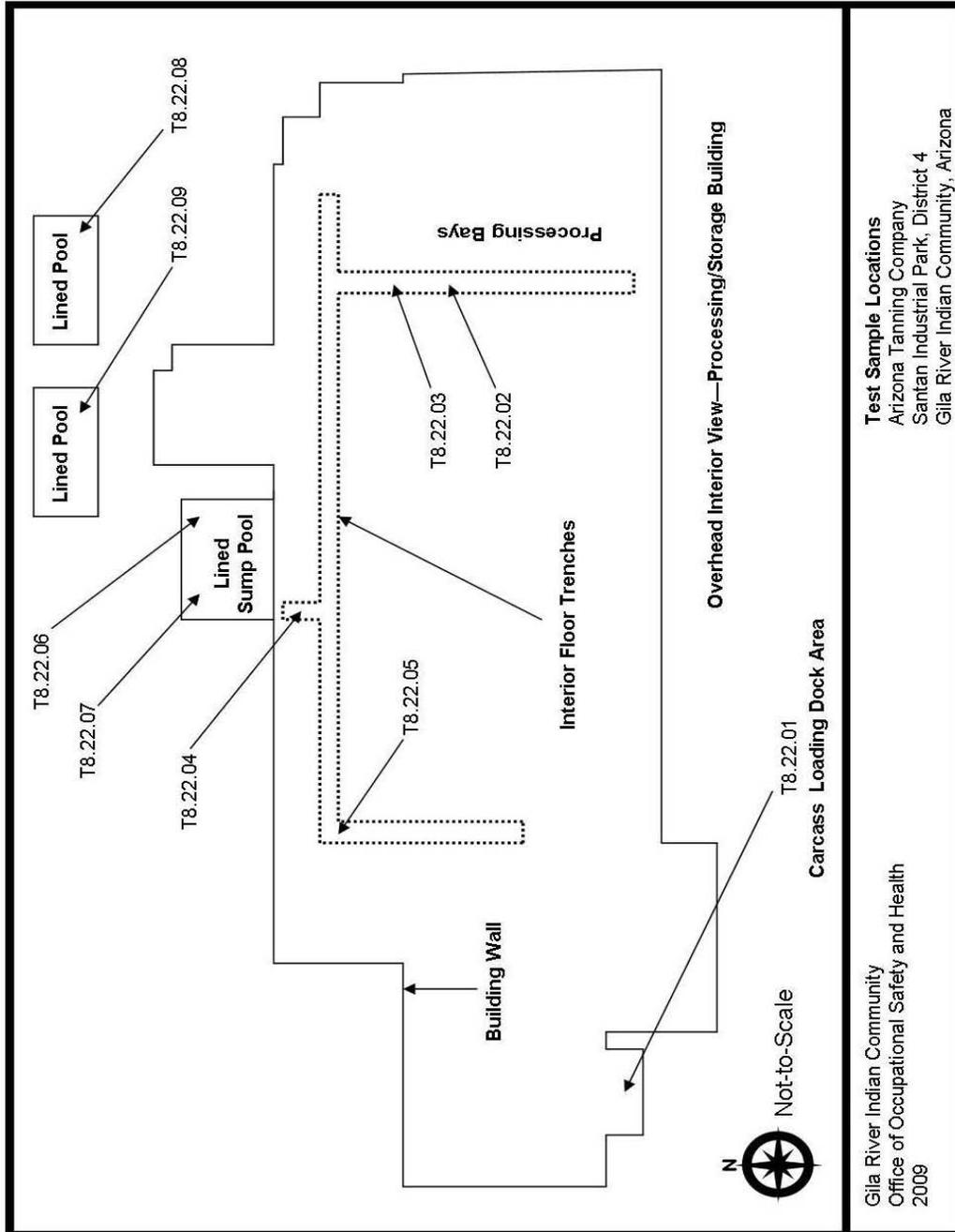


**Surface Waste Water Impoundments**  
Arizona Tanning Company  
Santan Industrial Park, District 4  
Gila River Indian Community, Arizona

Gila River Indian Community  
Office of Occupational Safety and Health  
2009



**Appendix D  
 Test Sample Locations  
 Arizona Tanning Company Site  
 Santan Industrial Park  
 Gila River Indian Community, Arizona**

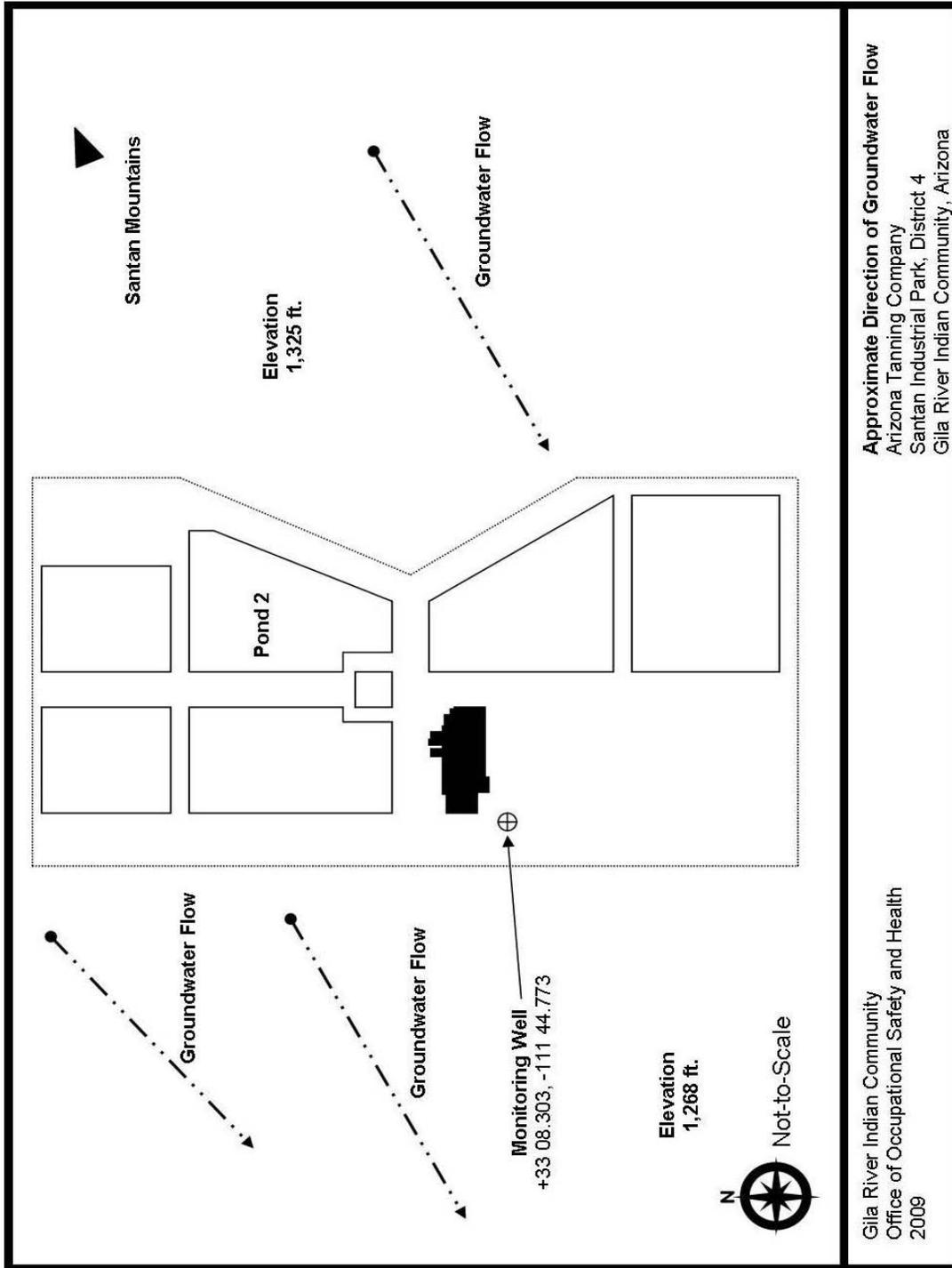


**Test Sample Locations**  
 Arizona Tanning Company  
 Santan Industrial Park, District 4  
 Gila River Indian Community, Arizona

Gila River Indian Community  
 Office of Occupational Safety and Health  
 2009



**Appendix E**  
**Approximate Direction of Groundwater Flow**  
**Arizona Tanning Company Site**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**

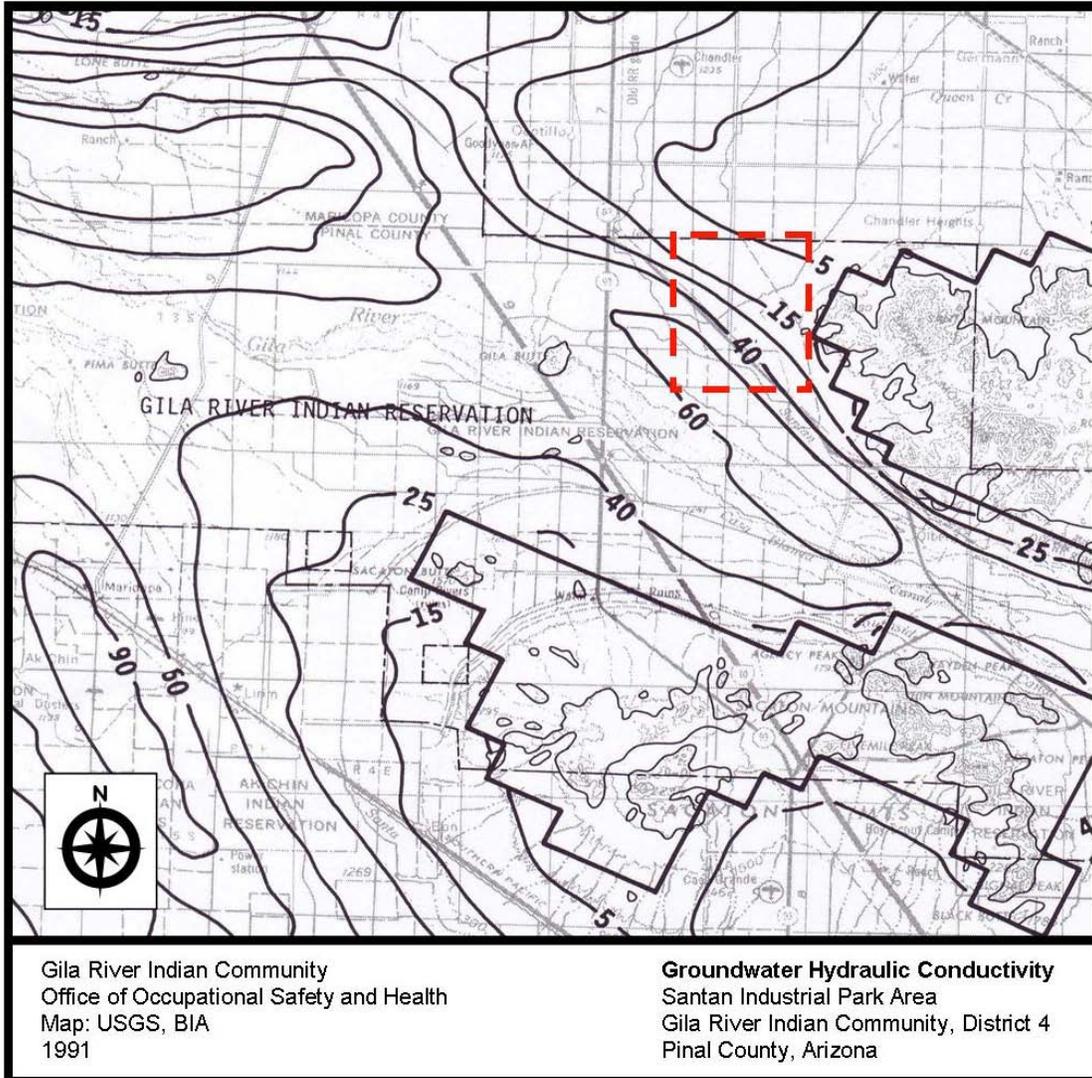


**Approximate Direction of Groundwater Flow**  
 Arizona Tanning Company  
 Santan Industrial Park, District 4  
 Gila River Indian Community, Arizona

Gila River Indian Community  
 Office of Occupational Safety and Health  
 2009

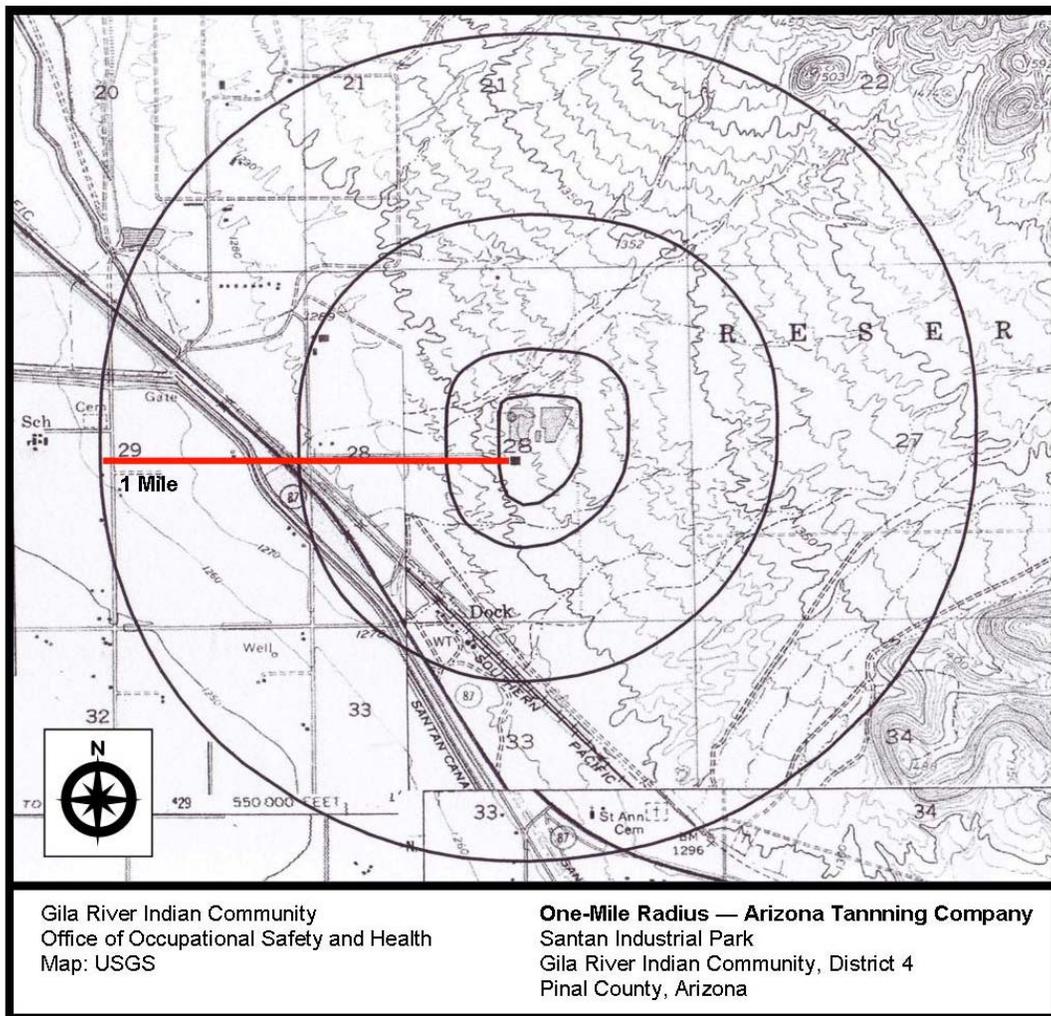


**Appendix F**  
**Hydraulic Conductivity of Groundwater**  
**Santan Industrial Park Area**  
**Gila River Indian Community, Arizona**



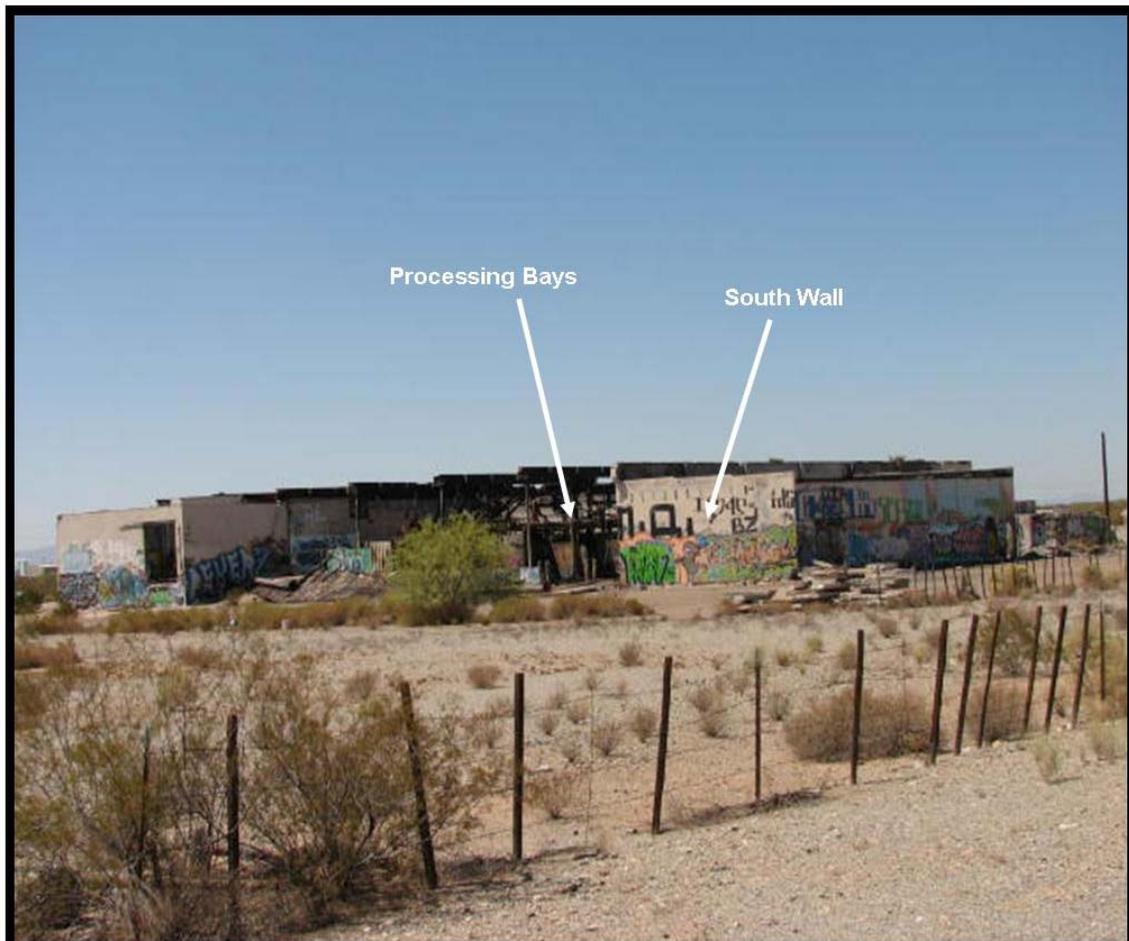


**Appendix G**  
**One-Mile Radius**  
**Arizona Tanning Company Site**  
**Gila River Indian Community, Arizona**





**Appendix H**  
**South Wall of Processing/Storage Building**  
**Arizona Tanning Company Site**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**

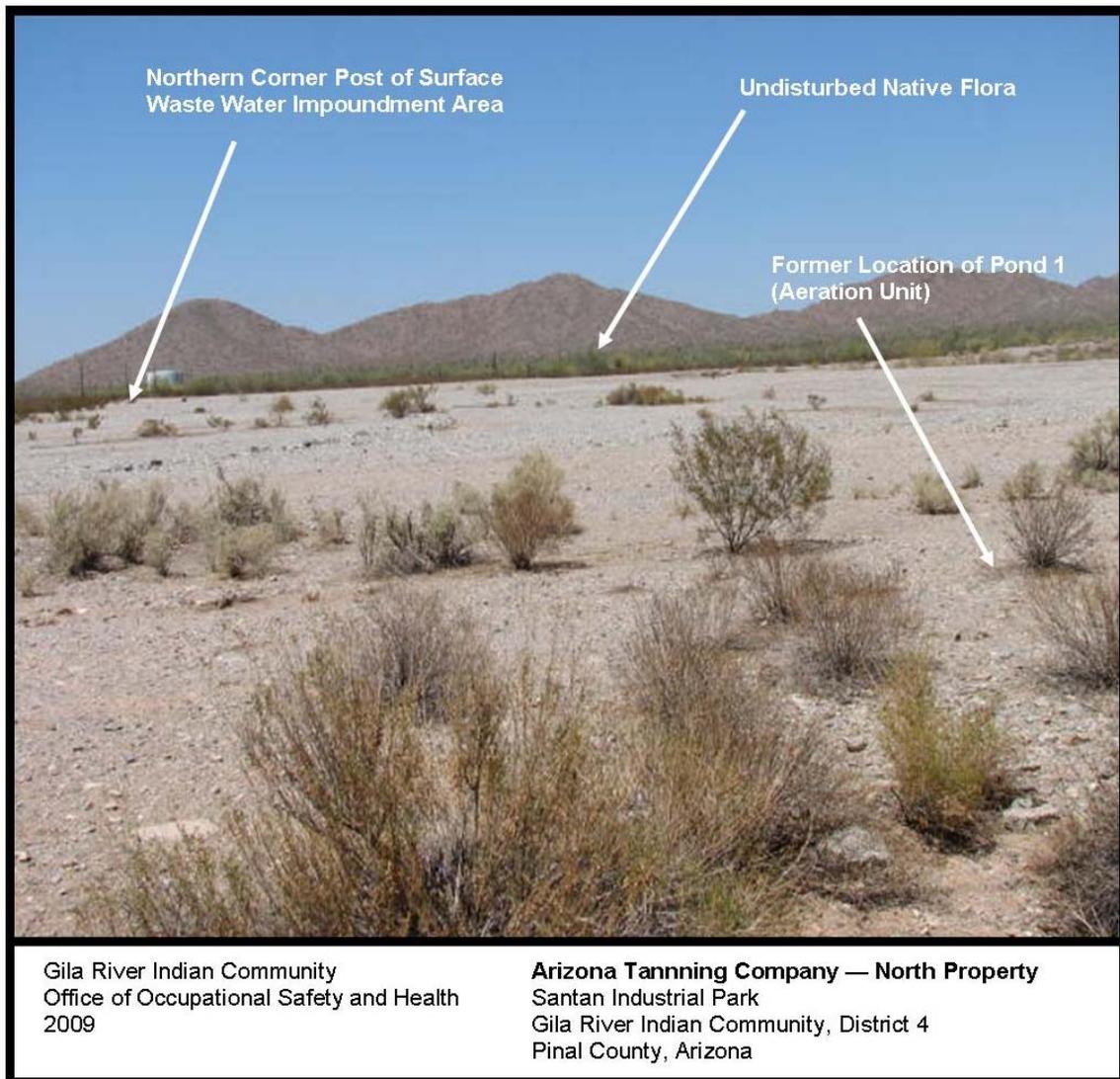


Gila River Indian Community  
Office of Occupational Safety and Health  
2009

**Arizona Tanning Company — Processing/Storage**  
Santan Industrial Park  
Gila River Indian Community, District 4  
Pinal County, Arizona

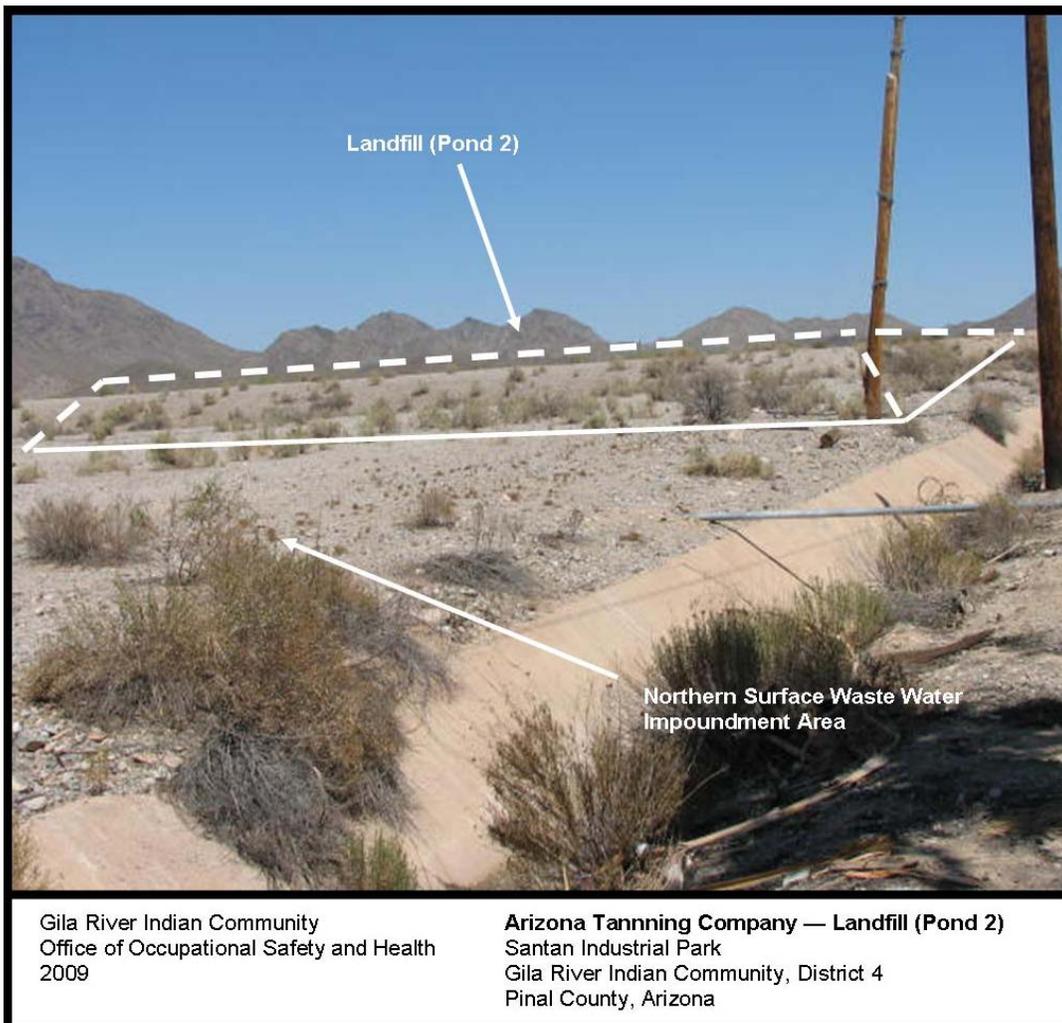


**Appendix I**  
**North Surface Waste Water Impoundment Area**  
**Arizona Tanning Company Site**  
**Santan Industrial Park**  
**Gila River Indian Community, Arizona**





**Appendix J  
Landfill (Pond 2)  
Arizona Tanning Company Site  
Santan Industrial Park  
Gila River Indian Community, Arizona**





**Appendix K  
Monitoring Well  
Arizona Tanning Company Site  
Santan Industrial Park  
Gila River Indian Community, Arizona**



Gila River Indian Community  
Office of Occupational Safety and Health  
2009

**Arizona Tanning Company — Monitoring Well**  
Santan Industrial Park  
Gila River Indian Community, District 4  
Pinal County, Arizona



**Appendix L  
Fall Hazard  
Arizona Tanning Company Site  
Santan Industrial Park  
Gila River Indian Community, Arizona**



Gila River Indian Community  
Office of Occupational Safety and Health  
2009

**Fall Hazard — Arizona Tanning Company**  
Santan Industrial Park  
Gila River Indian Community, District 4  
Pinal County, Arizona



**Appendix M  
Drowning Hazard  
Arizona Tanning Company Site  
Santan Industrial Park  
Gila River Indian Community, Arizona**



Sump Pool Filled to Capacity With Rainwater (8ft. Depth)

Gila River Indian Community  
Office of Occupational Safety and Health  
2009

**Drowning Hazard — Arizona Tanning Company**  
Santan Industrial Park  
Gila River Indian Community, District 4  
Pinal County, Arizona

