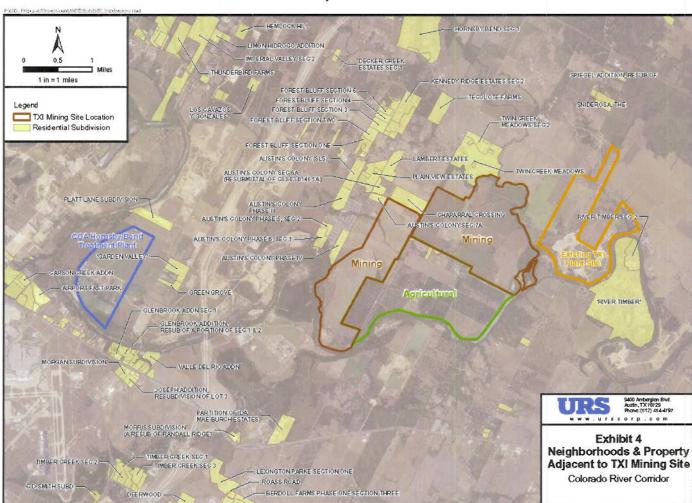


## I.C. Technical Plan

The URS Team's technical plan for the groundwater, air, and noise environmental monitoring within the Colorado River Corridor is designed to determine pre-mining baseline and post-mining environmental conditions or impacts resulting from TXI's Hornsby Bend East and Hornsby Bend West mining activities.

The URS Team understands the importance of the environmental monitoring to the parties that may be directly affected by the interpretation of the baseline data (**Exhibit 5**). For example, we are aware of the importance of air quality and noise levels to the Travis County residents who live in the Austin's Colony, Plain View Estates, Lambert Estates, Twin Creek Meadows, and Chaparral Crossing Condominium communities. We are also aware of the water availability concerns of local residents and pecan farmers who depend on groundwater for domestic and agricultural needs, and the needs of municipal water supply providers. Additionally, we are aware that sand and gravel aggregate is needed for the construction projects in southeast Travis County and surrounding areas.



**Exhibit 5. Map of Communities** 

The URS Team has an existing and trusting relationship with an Austin's Colony resident and is well positioned to build trusting relationships with additional stakeholders within the communities near the mining site. The URS Team understands that despite a well-designed, executed, and scientifically sound baseline evaluation, the local stakeholders will not be satisfied if they do not trust the environmental contractor. Therefore, our team is





dedicated to building and maintaining an open and honest relationship with the local Colorado River Corridor community.

The Technical Plan presented below is in chronological order by year and presents the Groundwater Availability and Quality (Task 1), Air Quality (Task 2), and Noise Assessment (Task 3) objectives that will be performed during Year 1, Interim Year, Year 2, and Year 3. A project process flow chart summarizing the schedule activities and deliverables for each task is presented in **Exhibit 6.** 

URS



# Exhibit 6. Detailed Process Flowchart for Proposed Environmental Monitoring Services

Coordination with Community Liaison Coordination with Community Liaison Coordination with Community Liaison Identifying Baseline Conditions and Trigger Levels for Task 1, 2, 3 and QAPPs for Task 1, 2 Field Sampling Plan First Annual Report Annual Report **Annual Report** Interim Report Year 3 Year 2 Independent Oversight from Geoscience Expert Independent Oversight from Geoscience Expert Independent Oversight from Geoscience Expert Independent Oversight Independent Oversight from Geoscience Expert from Geoscience Expert · ID Noise Monitoring Semi-Annual Noise Monitoring Semi-Annual Noise Monitoring Task 3 - Noise Task 3 - Noise Task 3 - Noise Locations Site Visit Prepare CAPCOG Agreement ID Air Monitoring Locations Task 2 - Air

• Quarterly Air Monitoring Quarterly Air Monitoring Quarterly Air Monitoring **Environmental Monitoring, Active Mining Environmental Monitoring, Active Mining Baseline Environmental Monitoring** Task 2 - Air Task 2 - Air Task 2 - Air Well Inventory, Review Well Logs
 Site Visit Project Kick Off and Management Planning Quarterly Water Level Monitoring
 Annual Water Quality Monitoring **Baseline Continuation**  Bi-monthly Water Quality and Water Level Monitoring Task 1 - Groundwater Task 1 - Groundwater Quarterly Water Level and Water Quality Monitoring Task 1 - Groundwater Task 1 - Groundwater Task 1 - Groundwater Quarterly Water Level and Door to Door Well Survey
 Survey Well Elevations Project Management Plan TXI Begins Active Mining Water Quality Monitoring Health and Safety Plan Project Execution Plan Notice to Proceed Planning Interim Year Year Year 3 Year Year 8

Public Meeting



Annual Public Meeting



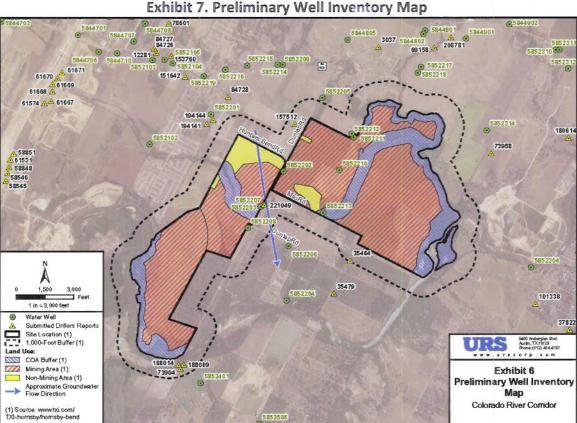
### Year 1 Tasks

# Year 1, Task 1- Groundwater Availability and Quality

### Well Inventory

URS will develop a complete well inventory of wells located within 1000 feet of TXI's mining area and screened within the Colorado River Alluvial Aquifer. URS will create an initial well inventory list using the TWDB database of registered public water supply and private wells. URS has created a preliminary well inventory (Exhibit 7) using the TWDB database in order to understand the level of effort that will be required to complete the well inventory and groundwater monitoring, as well as to better understand the sufficiency of the existing wells for completing the study objectives. The well inventory will be supplemented by URS identifying un-registered wells that are within 1000 feet of the TXI mine or located within an area that is not adequately represented by the well survey. URS will conduct interviews with property owners to identify well presence and, if present, to determine well construction details including screened interval, well diameter, well total depth, well location, top of well casing elevation, and visual inspection for general condition. URS will also interview well owners to determine: well yield, groundwater use, geological information from the well drilling log, and potential permission for property access and inclusion of the well in the groundwater monitoring program.

The final list of wells selected for the monitoring program will include 1) wells located upgradient and downgradient of the mining site, at evenly spaced locations in order to obtain as close to a representative area as possible; and 2) wells where permission for access from the well owner has been obtained. Each well log and well construction details, if available, will be reviewed to determine that the hydraulic zone screened in the well is the same hydrogeologic unit or is hydraulically connected to the alluvium and fluviatile terrace deposits that are expected to be mined and potentially dewatered during mining.





After the final list of wells is determined based on the criteria presented above and after consultation with the geoscientist expert, Dr. Jack Sharp, the wells will be surveyed by Landesign Services, Inc., who is a Texas licensed surveyor and is a certified Minority and Woman-Owned Business (M/WBE). The well location and top of casing measuring point will be accurate to within 0.05 feet and 0.15 feet, respectively. This level of accuracy will be sufficient for using the measured groundwater elevations to create potentiometric surface maps of the study area.

# **QAPP** Development

URS is experienced in the preparation and implementation of QAPPs using TCEQ and EPA guidelines. URS personnel assisted in the preparation of the first TCEQ Superfund Program QAPP and have prepared numerous QAPPs for state Superfund sites. URS has also prepared QAPPs for several federal Superfund sites and RCRA sites. These QAPPs detail several components of the project, including project management, data/measurement generation and acquisition, assessment and oversight, and data validation and data usability. URS has also implemented many projects utilizing the TCEQ Superfund Program and TCEQ Dry Cleaner Remediation Program QAPPs.

# **Groundwater Sampling**

Each groundwater well included in the monitoring program will be sampled during six, bi-monthly events. During each event, groundwater samples will be collected and the depth to groundwater below the surveyed top of casing will be measured, and all wells will be measured within the same 48 hour period to ensure a synoptic potentiometric surface is observed.

Importantly and in addition to the six synoptic water level surveys, URS proposes to install one water level pressure transducer in a centrally located well expected to represent typical groundwater levels within the study area. The transducer with built in data logger, such as an In-Situ Level TROLL 700 or equivalent, will measure and record water levels in the well at pre-determined time intervals such as once every six hours, and will be programmed for event mode testing at more frequent time intervals when triggered by a pre-determined change in pressure head. The transducer water level data will help identify natural fluctuations to the potentiomtric surface that otherwise may not be perceived with bi-monthly readings. Additionally, the transducer data will be compared to precipitation data from relatively nearby LCRA hydromet rain gage data from the Walnut Creek and Webberville Road Station and/or the Austin Bergstrom International Airport (ABIA) meteorological precipitation data. The transducer event mode water level data and precipitation data will provide information for a better understanding of baseline groundwater fluctuations due to rain events or other natural fluctuations that could be potentially misinterpreted if only seen on a bi-monthly time interval.

URS will also note while in the field the presence of any phreatophyte trees and plants that could potentially be affecting groundwater levels. Decreased water levels in areas with large stands of phreatophytes may be most notable during the growing season when transpiration rates of phreatophyte are greatest. To better understand mining related impacts on groundwater availability, we will need to understand potential impacts of phreatophytes on groundwater levels. An understanding of what influence phreatophyte trees have on groundwater level fluctuations will need to be considered while assessing the groundwater elevation data for mining related impacts.

Groundwater samples will be collected from each well in the monitoring program using the TCEQ Standard Operating Procedures (SOP) for low flow/minimal drawdown sampling or the SOP for standard/well-volume sampling methods as prescribed in the Field Sampling Plan/QAPP. The sampling procedure used (low flow or standard) will depend on the particular characteristics of each individual well, such as well yield, and functionality of dedicated pumps installed in production wells.





Groundwater from each well will be sampled for metals (including sodium, potassium, calcium, and magnesium), anions (chloride, sulfate, nitrate-nitrogen, carbonate alkalinity, and bicarbonate alkalinity), TSS, and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). The groundwater samples for metals and anions will be collected in sample containers and preserved as specified in the QAPP. The samples will then be delivered to the LCRA NELAC-accredited laboratory for analysis. Additional laboratory analysis for other water quality parameters, such as salinity, TDS, or other indicators used to evaluate the effect of groundwater pumping on the hyporheic zone of the Colorado River, may be recommended after consultation with Dr. Sharp or after the first round of data is reviewed. Recommendations will take into consideration any budgetary constraints the LCRA laboratory may have.

# Reporting

URS will prepare and submit three documents to Travis County that will cover Year 1 activities. The documents will be a QAPP, a Field Sampling Plan<sup>1</sup>, and a Year 1 Annual Report. Each document will go through the URS ITR process in addition to review by Dr. Sharp. URS will modify the documents as needed to address Dr. Sharp's comments and to include his input.

URS will develop a QAPP that will describe planning, sampling, documentation, sample analyses, and data analyses in sufficient detail to ensure that the groundwater monitoring program produces results which meet TCEQ requirements, i.e., analytical methods meet the levels of required performance and that groundwater monitoring procedures are consistent with TCEQ standards. Whenever possible, TCEQ SOPs for groundwater monitoring and sampling will be followed.



The Field Sampling Plan will provide a final list of wells and a map showing the location of each well to be included in the monitoring program and the rational for including each well. The Field Sampling Plan will identify the well location for the proposed transducer water level monitoring and will include SOPs for how groundwater levels, field parameters, and groundwater samples for laboratory analysis will be collected. The Field Sampling Plan will also provide a schedule for when each of the six monitoring/sampling events will take place, when the Draft Year 1 Annual Report will be submitted to Dr. Sharp, and when the report will be submitted to Travis County.

The Year 1 Annual Report will present: a review of field activities performed, field and laboratory groundwater quality data, groundwater elevation data, an interpretation of the water quality and groundwater elevation data including determination of baseline conditions, and recommended trigger levels for future action. The review of field activities performed will include a description of the activities performed (who, what, where, when) and will include presentation of field notes, photographs, and sample collection data sheets. The groundwater elevation and water quality data will be presented in a table format and validated laboratory reports will be presented in an appendix to the Annual Report.

Additional presentation of the data will be used for data interpretation. For the groundwater elevation data, potentiometric surface maps for each of the six synoptic water level surveys will be presented. The groundwater elevation data recorded with the pressure transducer will be presented in a well hydrograph with corresponding precipitation data. The water quality data may be presented in several ways, including Stiff and Piper diagrams or isocontour maps of individual water quality parameters. A range of baseline conditions for groundwater elevation and water quality parameters will be determined based on the interpretation of the data and observed trends and/or anomalies reveled by the data presentation (potentiometric surfaces, well hydrograph, Stiff and Piper diagrams, and isocontour maps).

<sup>&</sup>lt;sup>1</sup> The Field Sampling Plan and QAPP combined constitute the Sampling and Analysis Plan. URS plans to submit a consolidated Sampling and Analysis Plan to address Tasks 1, 2, and 3 activities.





To determine trigger levels for future action, based on changes to the monitored groundwater physical and chemical baseline conditions, additional data evaluation will be performed. Potentially this may include determination of statistical parameters, such as mean, median, and standard deviation of the values and presentation of the data with histograms or box and whisker plots. Trigger levels may then be assigned after reviewing the statistical analysis of the baseline values.

Trigger levels may also be set in accordance with the TRRP Tier 1 PCLs, or if a particular water quality parameter is not considered to be of concern from a human health standpoint and therefore does not have a PCL (i.e., calcium, chloride, iron, potassium, sodium and sulfate) then the trigger level could be set according to TRRP aesthetics and ecological criteria. The application of TRRP PCLs and aesthetic and ecological criteria as trigger levels would only be applicable for compounds with baseline levels less than the PCL or aesthetics and ecological criteria.

# Coordination with Dr. Sharp (Community Liaison and Geoscientist Expert)

The URS Team knows that the local community within the Colorado River Corridor is adamant that 1) the environmental contractor be impartial and independent of TXI, and 2) UT Professor of Hydrogeology, Dr. Jack Sharp, be included in the project. Dr. Sharp's participation as an independent reviewer to the project will add trust and assurance to the community that the URS team is performing without bias. URS is pleased to work with Dr. Sharp and has an existing and trusting relationship with him. Several members of the URS Team are former students of Dr. Sharp and URS Team



members have previously interacted with Dr. Sharp while attending hydrogeology lecture series at UT. Additionally, URS Team members presented a talk at the Geological Society of America South-Central Section Meeting, March 2009, in the Water Resource Challenges and Opportunities in North-Central Texas and Surrounding Regions Technical Session presided by Dr. Sharp. The URS Team has not previously worked with Dr. Sharp on a project providing professional services.

The URS Team will consultant with, and seek advice from, Dr. Sharp concerning the physical and chemical groundwater monitoring program. Specifically URS will seek Dr. Sharp's input for and review of the QAPP, Field Sampling Plan, and Year 1 Annual Report. Specific issues that the URS Team anticipates conferring with Dr. Sharp on include: selection of wells to include in the monitoring program, placement and measurement frequency of the water level transducer, addition of any additional water quality analysis, determination of baseline levels based on Year 1 data, and trigger levels for future action.

The URS Team will coordinate with Travis County, Dr. Sharp, and the community, as appropriate, for each Year 1 field event and milestone, including (in order) door to door well survey, submittal of the QAPP and Field Sampling Plan (including well inventory), professionally survey well locations, bi-monthly monitoring event (X6), submittal of the Year 1 Annual Report, and the first public meeting.

# Year 1, Task 2 - Air Quality

URS will conduct baseline air sampling for PM10 and PM2.5 according to the requested Scope of Services, Task 2 – Air Quality.

URS will survey the area downwind of the TXI site to identify candidate baseline sampling sites that are representative of conditions between TXI and receptors of interest (e.g., schools and residential areas). Exhibit 8 displays the prevailing wind direction for the site area. Candidate baseline air sampling sites will: (1) meet relevant EPA site exposure and probe siting criteria; (2) not be unduly impacted by nearby sources; (3) be accessible in all weather conditions; (4) have access to electricity; and (5) be secured, either inside existing locked fencing or by installing temporary fencing around the site. URS will select a preferred baseline monitoring site that meets these criteria, preferably one on public property where site access, security fencing, and electricity can be provided by the land owner at no cost. URS will then present its recommendation to Travis County for approval.





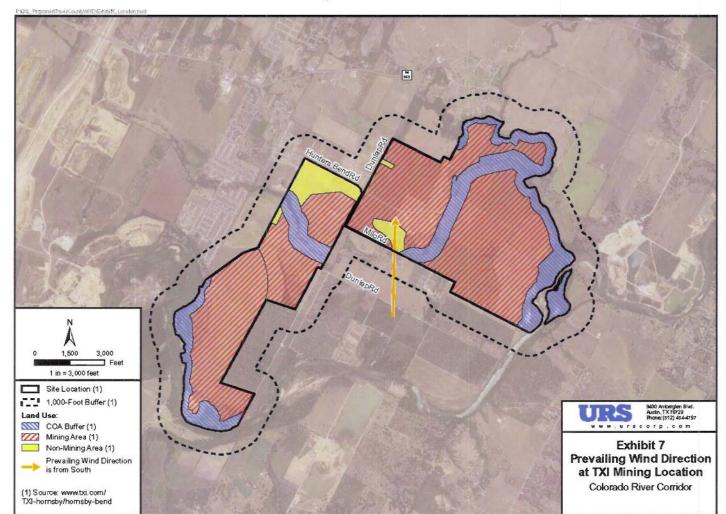


Exhibit 8. Map with Wind Direction

URS will obtain any necessary agreements to use the CAPCOG sampling equipment. As CAPCOG's air monitoring contractor on the Austin-Round Rock Air Toxics Study, URS has already established a successful professional relationship with the CAPCOG Air Quality Program and anticipates no problems in obtaining permission to use the equipment. Before we deploy the sampling equipment in the field, URS will thoroughly inspect and test the instruments and conduct any needed maintenance procedures or repairs.

URS will develop a Field Sampling Plan/QAPP for the air sampling study that is consistent in both content and format with TCEQ and EPA guidelines for studies of this nature and in accordance with our corporate Quality Management System. If requested by Travis County, we will seek TCEQ review and approval of the air sampling Field Sampling Plan/QAPP before the first samples are collected. Among other things, the Field Sampling Plan/QAPP will describe the sampling site; sampling equipment; sampling frequency, period, and duration; equipment calibrating, operating, and maintenance procedures; and steps taken to maintain and assess data quality.

URS will conduct baseline monitoring at a frequency of once each calendar quarter, for periods of 18 consecutive days, over a total duration of approximately 1 year (i.e., four quarters). URS will install, test, and calibrate the sampling equipment prior to each quarterly sampling period. Since conventional PM10 and PM2.5 sampling instruments are not usually operated continuously unattended for 18 consecutive days, URS or its subcontractor





will visit the sampling site on every third day to verify that the instruments are operating properly and maintaining the appropriate flow rates. After each 18-day sampling period is completed, URS or its subcontractor will retrieve the PM10 and PM2.5 filters, complete sample documentation and chain-of-custody information, and ship the filters to a NELAC-accredited laboratory for gravimetric analysis. For security, URS will store the sampling equipment at its Austin air monitoring laboratory between sampling periods.

URS maintains an inventory of weather stations that are available to install and measure wind speed, wind direction, and other pertinent variables at the sampling site; however, as a measure to control costs, we recommend reliance on the National Weather Service meteorological data collected at ABIA. Over an 18-sampling period, on-site meteorological data are unlikely to provide any greater fidelity to the analysis or interpretation of the PM measurement results in an area of relatively flat terrain. The airport data are available in real-time and archive from the TCEQ website.

URS will include the findings of the baseline air study giving the sampling results, assessment of data quality, and recommendations in the Year 1 Annual Report

# Year 1, Task 3 - Noise Assessment

The purpose of the noise monitoring study during Year 1 will be to determine existing noise levels in the vicinity of the TXI Hornsby Bend East and Hornsby Bend West sites and at nearby sensitive receptor locations. The results of the Noise Monitoring Study will be used to accurately characterize the existing or baseline ambient noise environment within the project area. The Noise Monitoring Study will also identify significant noise sources near the TXI facilities, as well as to identify noise sources unrelated to TXI. The resulting baseline noise levels will then be used as a comparison tool with future noise levels to determine potential noise impacts once mining operations begin.



For the noise assessment effort, URS will prepare a Noise Field Sampling Plan for the monitoring of existing and future noise levels in the vicinity of the TXI Hornsby Bend East and Hornsby Bend West sites. The Noise Field Sampling Plan will identify significant sources of noise near the TXI sites, identify sensitive receptors located within the project vicinity, determine sensitive receptor locations relative to future mining activities, provide a description of the noise monitoring methodology, and summarize regulatory noise limits applicable to the project. The Noise Field Sampling Plan will be updated as new sources of noise or sensitive receptors are identified within the study area.

Noise sensitive land uses within the greater study area include residential areas, schools, and churches. As a first step to accurately characterize the study area, URS will perform a detailed site reconnaissance in the field to identify all sensitive receptors located near the proposed mining sites. The identified sites may include residential receptors located within the established Austin's Colony, Chaparral Crossing, and Twin Creek Meadows developments, as well as receptors located within rural settings and emerging developments such as the Watersedge development along the Colorado River. URS will document the type and location of each identified sensitive receptor, including other types of receptors such as parks or day care facilities that may be located within the study area. URS will also document significant noise generation activities from existing TXI mining operations road construction activities as appropriate. Once all sensitive receptor locations are identified, URS will select receptors located near the TXI mining locations that are either close to the project site or can be considered representative of a group of similar sensitive receptor locations close to the project site.

Once representative sensitive receptor sites have been determined, URS will undertake an extensive baseline noise monitoring study following the Noise Field Sampling Plan and incorporating sensitive receptor sites identified during the initial site reconnaissance effort. The objective of the monitoring study will be to determine





ambient noise levels in areas located between existing and future surface mining (sand and gravel) activities and at nearby sensitive receptors. Existing noise levels will be monitored at selected sensitive receptors and at other points located on the periphery of the TXI Hornsby Bend East and Hornsby Bend West sites. It is anticipated that noise measurements will be performed semi-annually during the first year baseline period, over a one-week monitoring period. Monitoring operations will be planned so as to capture the existing baseline noise environment at each site early in the monitoring period. The second monitoring period will be timed to capture additional sources of ambient noise that may become established within the study area that were not present during the earlier monitoring study. URS will document all sources of noise during each monitoring period. URS will also document field observations of each monitoring site and include observations of new or other significant sources of noise unrelated to TXI operations, such as aircraft noise and roadway or other construction noise. Noise measurements will be performed at different times of the day, night, and week.

URS will perform all noise measurements using portable sound level meters and other equipment appropriate for the determination of existing outdoor noise levels and of sufficient accuracy to yield valid data (ANSI Type II or better). A series of short-term and long-term noise measurements will be performed to establish the existing, premining noise levels within the study area. Sufficient short-term (15-minute to 1-hour) and long-term (24-hour) noise measurements will be conducted and monitoring results will be logged and electronically stored for quality control purposes. URS will install, maintain, calibrate, and protect all monitoring equipment, as appropriate. At a minimum, the monitoring equipment will measure equivalent (Leq) and/or day-night (Ldn) noise levels, maximum (Lmax) and minimum (Lmin) noise levels, as well as other noise metrics. For longer monitoring periods, noise metrics will be plotted over time.

At the conclusion of the baseline "pre-mining" phase, URS will document existing noise sources, noise propagation pathways, sensitive receptor locations, outdoor noise impact threshold or trigger levels, applicable local, state, and/or federal regulatory noise limits, and a summary of monitored baseline noise levels at each monitoring location in the Year 1 Annual Report.

### **Interim Year Tasks**

After 12 months of baseline environmental monitoring, but prior to commencement of TXI mining activities, it is assumed that up to one year of interim groundwater monitoring activities will take place. For budgetary purposes, the URS Team has no air or noise monitoring planned for the Interim Year.

Interim Year groundwater monitoring will include 1) one groundwater sampling event for metals, anions (chloride, sulfate, nitrate-nitrogen, carbonate alkalinity,



and bicarbonate alkalinity), TSS, and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature); 2) quarterly synoptic water level surveys; and 3) continuation of groundwater elevation data collection with the water level pressure transducer. All field sampling, reporting, and coordination activities will be performed in the Interim Year as described above in the Year 1, Task 1 Technical Plan with the exception of groundwater sampling and monitoring frequency.

URS will coordinate with Travis County, Dr. Sharp, and the community, as appropriate, for each Interim Year field event and milestone, including (in order) quarterly-monitoring events (X4) and submittal of the Interim Year Annual Report. The Interim Year Annual Report will document the one groundwater sampling event and quarterly water level monitoring events, present the groundwater data, and compare the interim data to baseline and trigger levels. Baseline and trigger levels could potentially be adjusted based on the continued baseline monitoring of the Interim Year.





### Year 2 Tasks

Year 2 tasks will be performed during the first 12-month period of active mining activities at TXI's Hornsby Bend East and Hornsby Bend West mining sites. Year 2 environmental monitoring will document the measurable changes to groundwater availability, groundwater quality, air quality, and noise levels relative to pre-mining baseline conditions.

# Year 2, Task 1- Groundwater Availability and Quality

Year 2 groundwater monitoring will include quarterly groundwater sampling for metals, anions (chloride, sulfate, nitrate-nitrogen, carbonate alkalinity, and bicarbonate alkalinity), TSS, and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature); synoptic water level surveys; and continuation of groundwater elevation data collection with the water level pressure transducer. All field sampling, reporting, and coordination activities will be performed in Year 2 as described above in the Year 1, Task 1 Technical Plan with the exception of groundwater sampling and monitoring frequency.

URS will coordinate with Travis County, Dr. Sharp, and the community, as appropriate, for each Year 2 field event and milestone, including (in order) quarterly-monitoring events (X4), submittal of the Year 2 Annual Report, and the Year 2 public meeting. The Year 2 Annual Report will document the quarterly-groundwater monitoring events, present the groundwater monitoring data, and compare the Year 2 groundwater data to baseline and trigger levels. The Year 2 Annual Report will identify any water quality parameters or groundwater elevations that vary from trigger levels.

# Year 2, Task 2 - Air Quality

Air quality sampling will be conducted for two consecutive years during the active mining phase of this project. The Field Sampling Plan will be identical to that of Year 1, except one additional sampling site will be added upwind of the mine.

# Year 2, Task 3 - Noise Assessment

The Year 2 noise monitoring study will determine noise levels in the vicinity of the TXI Hornsby Bend East and Hornsby Bend West sites and at nearby sensitive receptor locations as a result of TXI mining operations. Noise levels will be assessed using a combination of computer modeling and field measurements. Year 2 noise levels will be compared to baseline noise levels identified during the Year 1 "pre-mining" phase to determine the incremental increase of noise levels in the vicinity of TXI operations and to identify potential noise impacts at nearby sensitive receptor locations. The Noise Monitoring Study will also identify significant noise sources in operation at the TXI facilities as well as to identify significant noise sources unrelated to TXI.

During Year 2, The URS Team will perform a detailed site reconnaissance in the field to confirm the location and appropriateness of sensitive receptors located near the TXI mining sites. URS will also identify any new sensitive receptors that were not included in the baseline noise analysis. As an example, if new sensitive receptors become established within the Watersedge, Austin's Colony Phase 2, or other developments during Year 2, these receptors would need to be included in the noise monitoring study. URS will document the type and location of each identified sensitive receptor located within the study area. URS will document significant noise generation activities from new TXI mining operations and will also document significant noise generation activities from sources unrelated to TXI. Once all existing and new sensitive receptor locations have been identified, URS will update the Noise Field Sampling Plan to incorporate any additional noise sampling and analysis locations and new noise generation sources.

The URS Team will conduct extensive noise measurements at sites included in the Year 1 "pre-mining" phase, and supplemented with additional sites identified during the Phase 2 site reconnaissance effort. The objective of the Year 2 monitoring study will be to determine ambient noise levels in areas located between active surface mining (sand and gravel) activities and nearby sensitive receptors. Noise measurements will be conducted using noise





monitoring methodologies identified during the Year 1 effort. It is anticipated that noise measurements will be performed quarterly during Year 2, over a one-week monitoring cycle. Monitoring operations will be timed to coincide with active mining operations at the TXI facility, including the incorporation of noise from material haul vehicles accessing the site. The URS Team will document all sources of noise during each monitoring period. URS will also document field observations of each monitoring site and include observations of new or other significant sources of noise unrelated to TXI operations. Noise measurements will be performed at different times of the day, night, and week.

The URS Team will supplement the noise monitoring effort with predicted noise levels at discrete receptor distances based on computer modeling. The models used to determine predicted noise levels may include noise propagation models or the FHWA Traffic Noise Model (TNM). The use of the TNM model would be appropriate for the prediction of noise levels from on-road sources, such as heavy transport vehicles accessing TXI sites as well as increased traffic along local roadways resulting from increased mining activities in the area. In consultation with Travis County, the URS Team will obtain detailed traffic data estimates by vehicle class as input into the noise model. The URS Team will supplement the traffic data with local traffic counts obtained during site reconnaissance and field monitoring activities.

At the conclusion of the Year 2 "after mining begins" phase, the URS Team will document existing noise sources, noise propagation pathways, sensitive receptor locations, outdoor noise impact threshold or trigger levels, monitored and modeled noise levels, and a comparison of monitored noise levels with baseline noise levels, as well as with applicable local, state, and/or federal regulatory noise limits or threshold values in the Year 2 Annual Report. If applicable, a noise mitigation plan will be proposed.

### Year 3 Tasks

Year 3 tasks will be performed during the second 12-month period of active mining activities at TXI's Hornsby Bend East and Hornsby Bend West mining sites. Year 3 environmental monitoring will document the measurable changes to groundwater availability, groundwater quality, and air quality relative to pre-mining baseline conditions. The Year 3 groundwater and air monitoring activities will be the same as those for Year 2.

