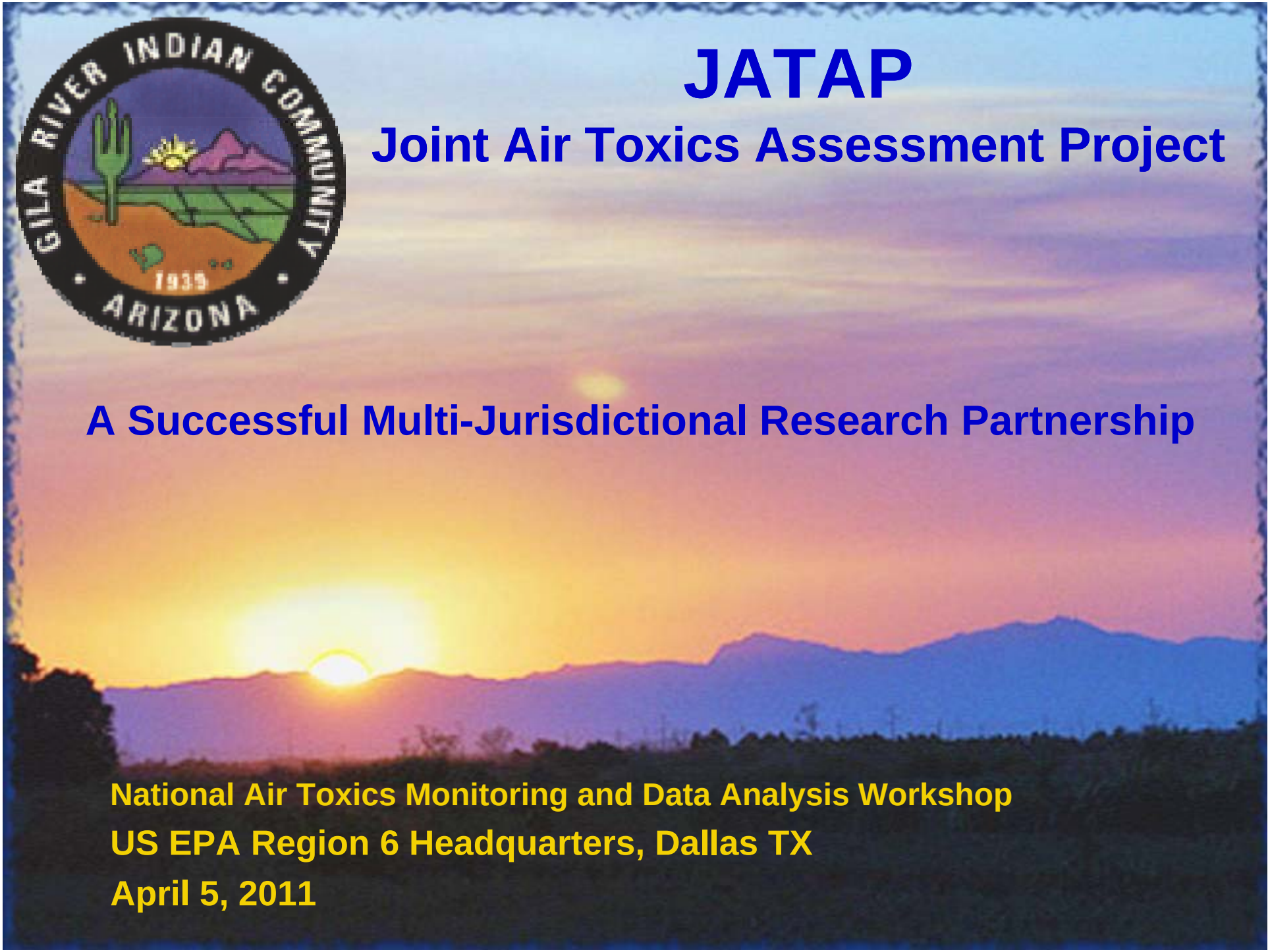


JATAP

Joint Air Toxics Assessment Project

A Successful Multi-Jurisdictional Research Partnership

National Air Toxics Monitoring and Data Analysis Workshop

US EPA Region 6 Headquarters, Dallas TX

April 5, 2011

Presented by:

Leroy Williams, Environmental Engineer
Department of Environmental Quality
Air Quality Program
Gila River Indian Community

Joint Air Toxics Assessment Project (JATAP)

Multi-Jurisdictional Collaboration :
tribal, state, county, federal governments

- **determine types, distribution and sources of air toxics in central Arizona (local-scale, high quality data for modeling and risk assessment)**
- **determine health risks from air toxics**
- **reduce health risks from air toxics**

Air Pollution Does Not Recognize Political Boundaries

To understand air toxics, Tribes, State and Counties need data from on and off their jurisdictions

- sampling for 1 year at all 7 sites; also meteorological data

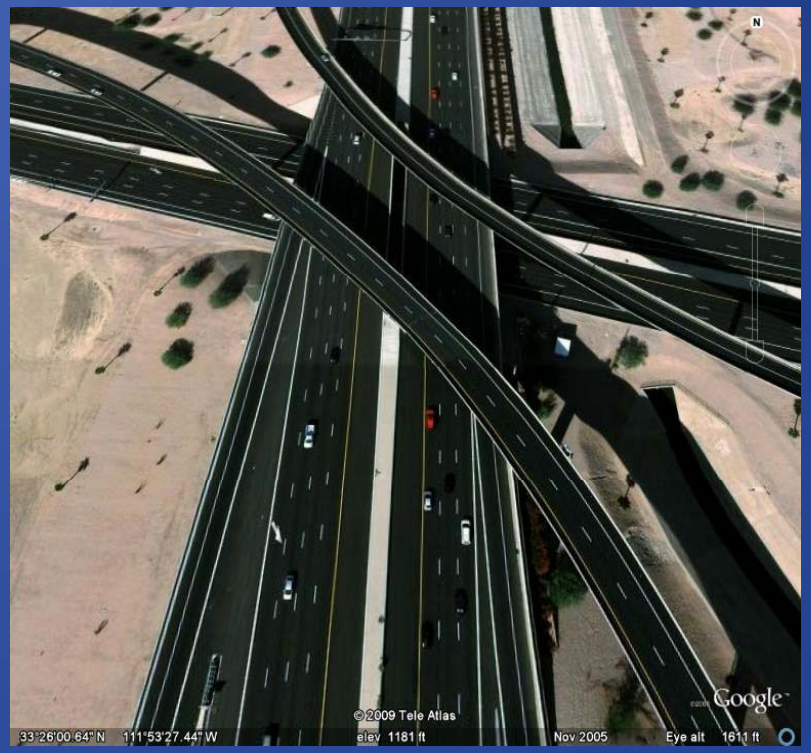
- 24 hour average samples taken every 6th day

Key Tribal Interests

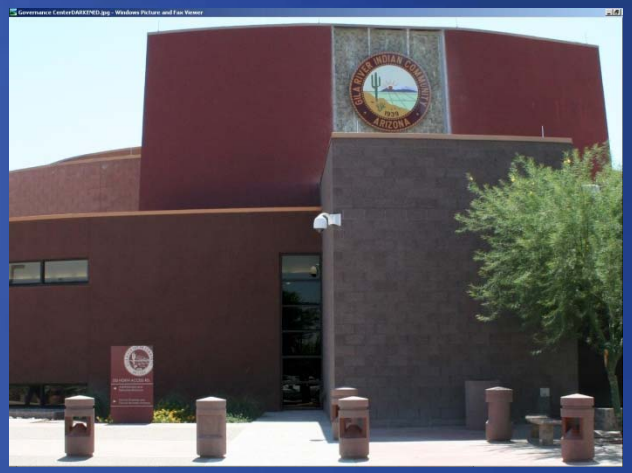
Are air toxics coming onto tribal lands from neighboring urban areas?

What air toxics are being emitted from freeways on tribal lands?

Loop 101-202
SRPMIC



JATAP is a Successful Multi-jurisdictional Project



- **Multi-jurisdictional**
  Steering Committee
  Consensus decision-making;
  ADEQ Tribal Policy
- **Coordination and TA**
  ASU American Indian Policy Institute
  (ITEP for the first phase)
- **Funding**
  EPA Grants; EPA scientist on special detail;
  State and Tribal funds

JATAP Participants

Agencies with Monitoring Sites

Salt River Pima-Maricopa Indian Community EPNR

Gila River Indian Community DEQ

Arizona DEQ

Other participants

Fort McDowell Yavapai Nation

Maricopa County & Pinal County
Air Quality Control Districts

EPA Region 9 & OAQPS

City of Phoenix

JATAP monitored for Gaseous Air Toxics and Fine Particulates

FROM:

- **mobile sources** (cars, trucks)
  1,3-butadiene, acetaldehyde, formaldehyde, benzene, ethylbenzene, toluene; $PM_{2.5}$
- **stationary sources** (industry)
  chloroform, methylene chloride, trichloroethylene, tetrachloroethylene, styrene, o,m,p-xylenes, hexachlorobutadiene, vinyl chloride
- **background** (throughout US) carbon tetrachloride

- **Fine Particulates** (speciated)
  arsenic, cadmium, chromium VI, nickel, cobalt, manganese, Diesel Particulates

PRELIMINARY RISK ASSESSMENT (without full modeling results)

Overall Study Area Cancer Risks

90% of risk from:

- **-diesel particulates**
- **-all carbonaceous particulates**

Slightly increased risk:

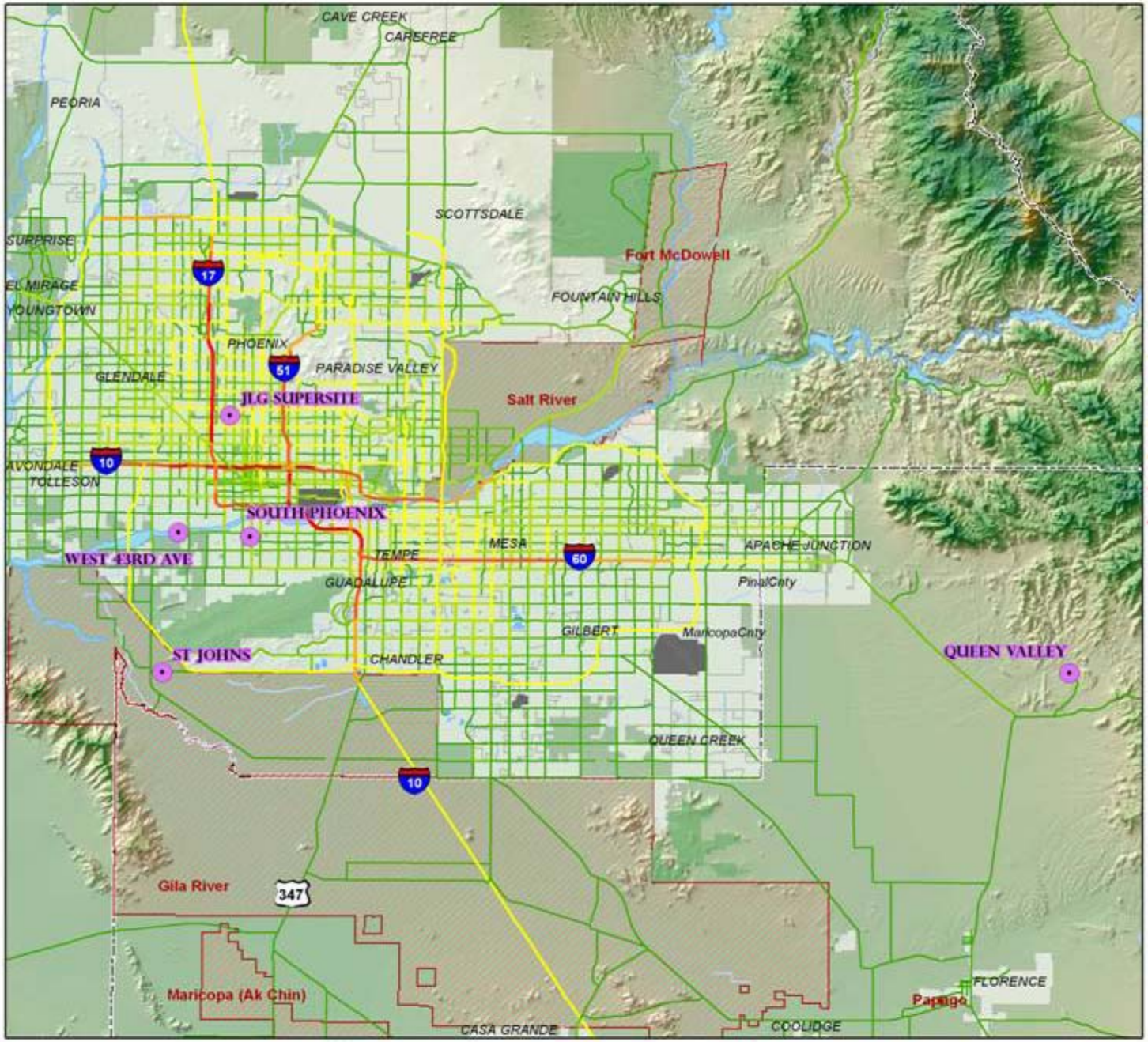
-formaldehyde; 1-3 butadiene acetaldehyde; benzene; chloroform; arsenic; cadmium

Geographical Distribution of Risk Tribal Locations

Salt River (transport; freeway emissions)

- Gila River emissions closer to background
- Exposure

Annual Average Daily Traffic Volume (vehicles per day)



Legend

- AQ Monitoring Sites

AADT

- 0 - 10,000
- 10,001 - 20,000
- 20,001 - 35,000
- 35,001 - 75,000
- 75,001 - 125,000
- 125,001 - 200,000
- 200,001 - 266,000
- Park
- Airport
- Tribal Land Boundary
- Citiy Boundary
- County Boundary

N W E S

0 2.5 5 10 15 Kilometers

RISK ASSESSMENT

Stationary source dispersion and exposure modeling (HEM-AERMOD model)

- **-developed emissions inventory (EI) containing 4000+ emission point entries ('model ready')**

Urban area-wide mobile source modeling (CAMx model)

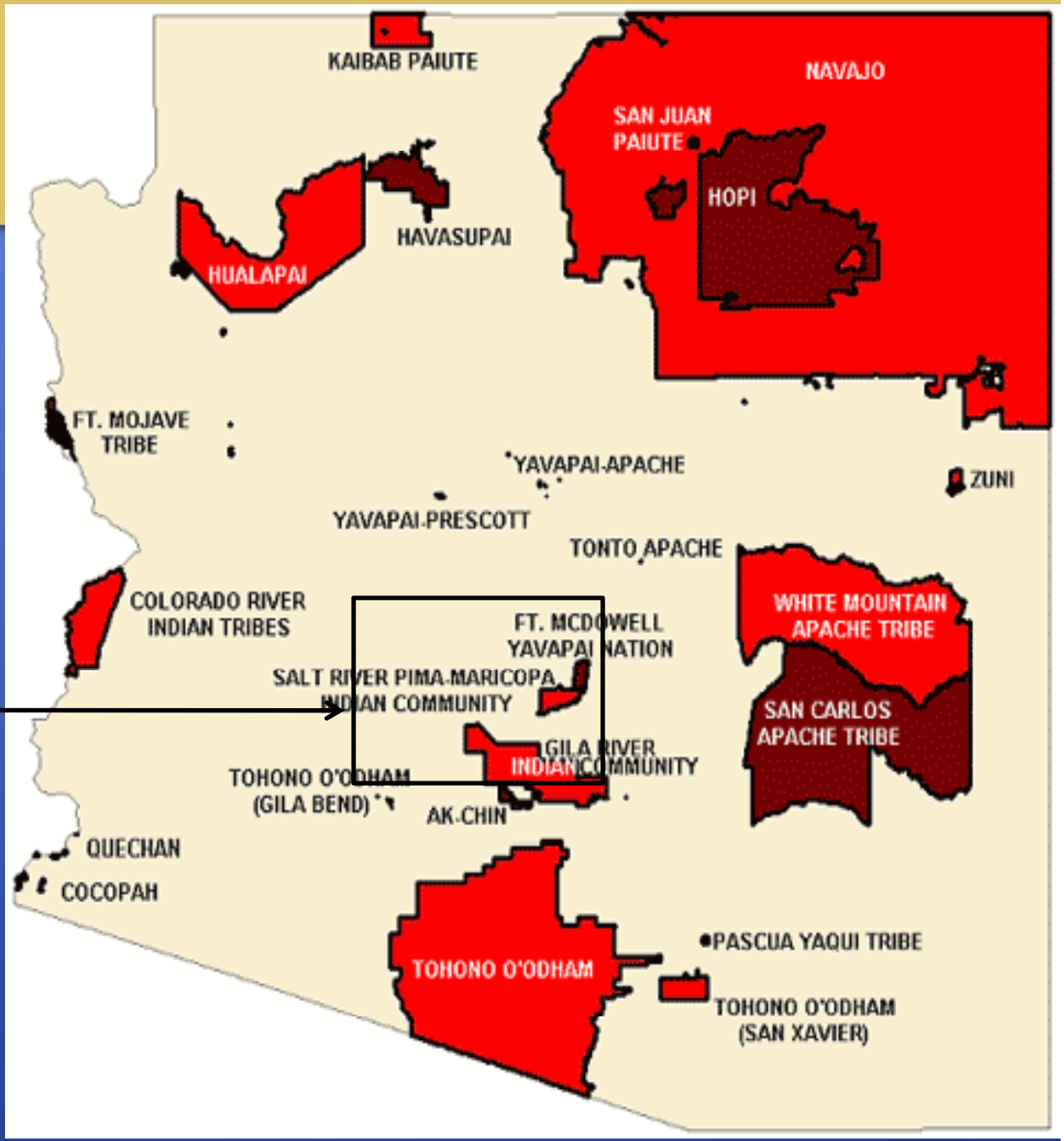
- **-developed EI**
- **-includes diesel PM**

Mobile source dispersion modeling to identify near-roadway concentrations and exposures

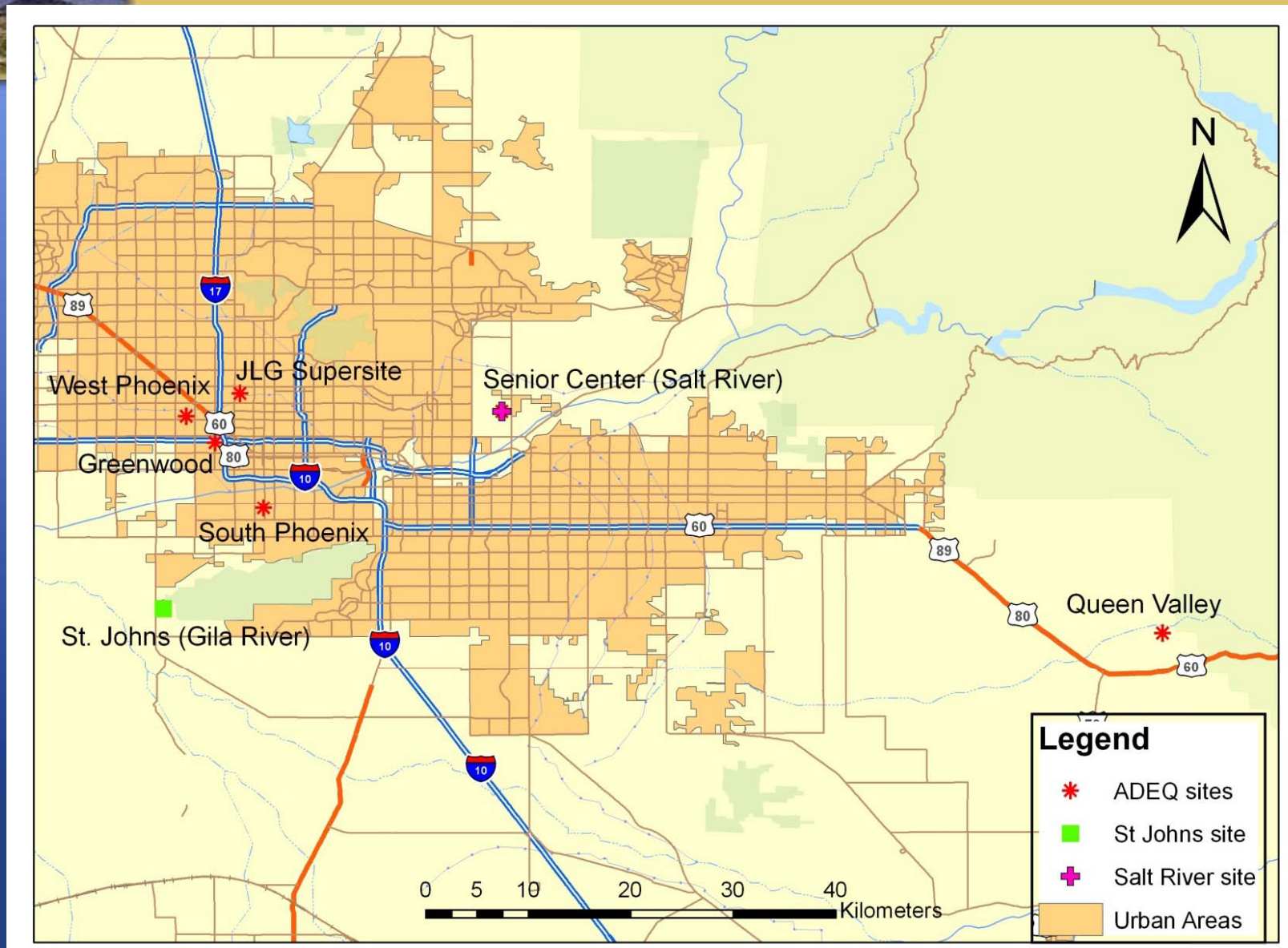
- **-highest mobile source concentrations within 250m of freeways; drop off at 500m**

ARIZONA

JATAP Study Area



Monitoring Sites



FROM MONITORING TO RISK ASSESSMENT

FROM DATA TO POLICY AND ACTION

- **Modeling and Risk Assessment (no NAAQS)**
- **Outreach Messages: include Action Plan for risk reduction**

Case Study of Unintended Consequences

- **Multiple Air Toxics Exposure Study (South Coast, CA 1999)**
- **ban on new schools or expansions near freeways; school over-crowding**

Possible Options:

-filters in near roadway buildings

-targeted reduction in outdoor activities

-school bus anti-idling and retrofit

-buffer zones (land use planning)

-roadway design

-trees and vegetation

Gila River Indian Community JATAP Outreach Message

- The Gila River Indian Community's air quality is good (particularly from a regional perspective)
- Data indicates essentially no health risk in District 6 of air toxics coming from industries in urban areas
- There is a low level increase in air toxics (benzene) from vehicles; these air toxics are distributed though the whole Valley; at Gila River the levels are lower than at Salt River and only slightly higher than at Queen Valley (a fairly remote site)

Gila River Indian Community JATAP Outreach Message

- The primary health risk from these vehicle air toxics is an increased risk of cancer (leukemia); essentially all urban areas in the U.S. have levels of air toxics that pose some increased cancer risk

- High traffic roadways and freeways will increase air pollution near the roadway; air pollution declines 60% at 320 feet from the roadway and drops to background levels at 650 feet

Gila River Indian Community JATAP Outreach Message

- There are mitigation measures that potentially reduce health risks from near-roadway pollution
- JATAP is researching these measures and working in the Community to develop projects to reduce air toxics, particularly at schools

THANK YOU!

For More Information:

Leroy Williams (520) 562-2234
williams@gilanet.net