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Environmental Protection
Agency

Enforcement and
Compliance Assurance
(2201A)

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Spring 1996

EPA

Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Compass Industries Site Profile

Site Description:
Abandoned municipal and industrial landfill

Site Size: 46 acres

Primary Contaminants:
Jet fuel, solvents, heavy metals, benzene, and pesticides

Potential Range of Health Effects:
Central nervous system disorders and increased risk of cancer

Nearby Population Affected:
3,200 people

Ecological Concerns:
Habitat for American bald eagle

Year Listed on NPL: 1984

EPA Region: 6

State: Oklahoma

Congressional District: 1

Success in Brief

Cooperative Efforts Protect River Ecosystem From Toxic Waste

A 10-minute drive from the Tulsa, Oklahoma city line, a limestone quarry served as a landfill for oil refining and manufacturing residues. Co-mingled with municipal garbage, industrial wastes caught fire or erupted underground, polluting soil and tainting area ground water. At the base of the cliff, the Arkansas River traversed the edge of the Osage Indian Reservation where hundreds of years ago bald eagles plucked fish from the shallow waters.

This site, where ancient meets modern, was chosen by the U.S. Environmental Protection Agency (EPA) for cleanup under a special program called the Superfund. Effective enforcement provisions in the law convinced a few conscientious companies to step forward and assume responsibility for cleanup. The remedial work took less than two years and demonstrates the way the Superfund program works best: protecting the surrounding ecosystem.

Vast segments of the **Arkansas River** are within the Central Flyway, a major migratory route for thousands of birds.

The Site Today

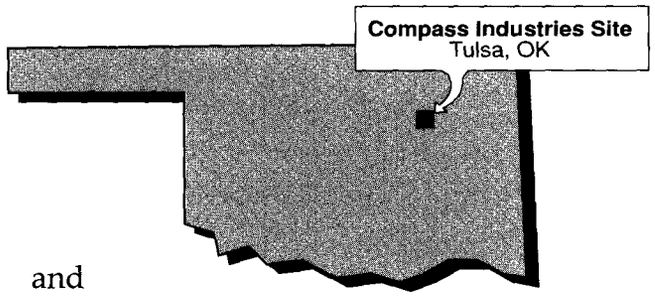
A protective cap seals the old landfill with a top layer of grasses and ground covers. Methane gas is vented through an underground piping network. A five-year review is scheduled to evaluate the integrity of the cap and other measures taken to halt the migration of leachate into the river.

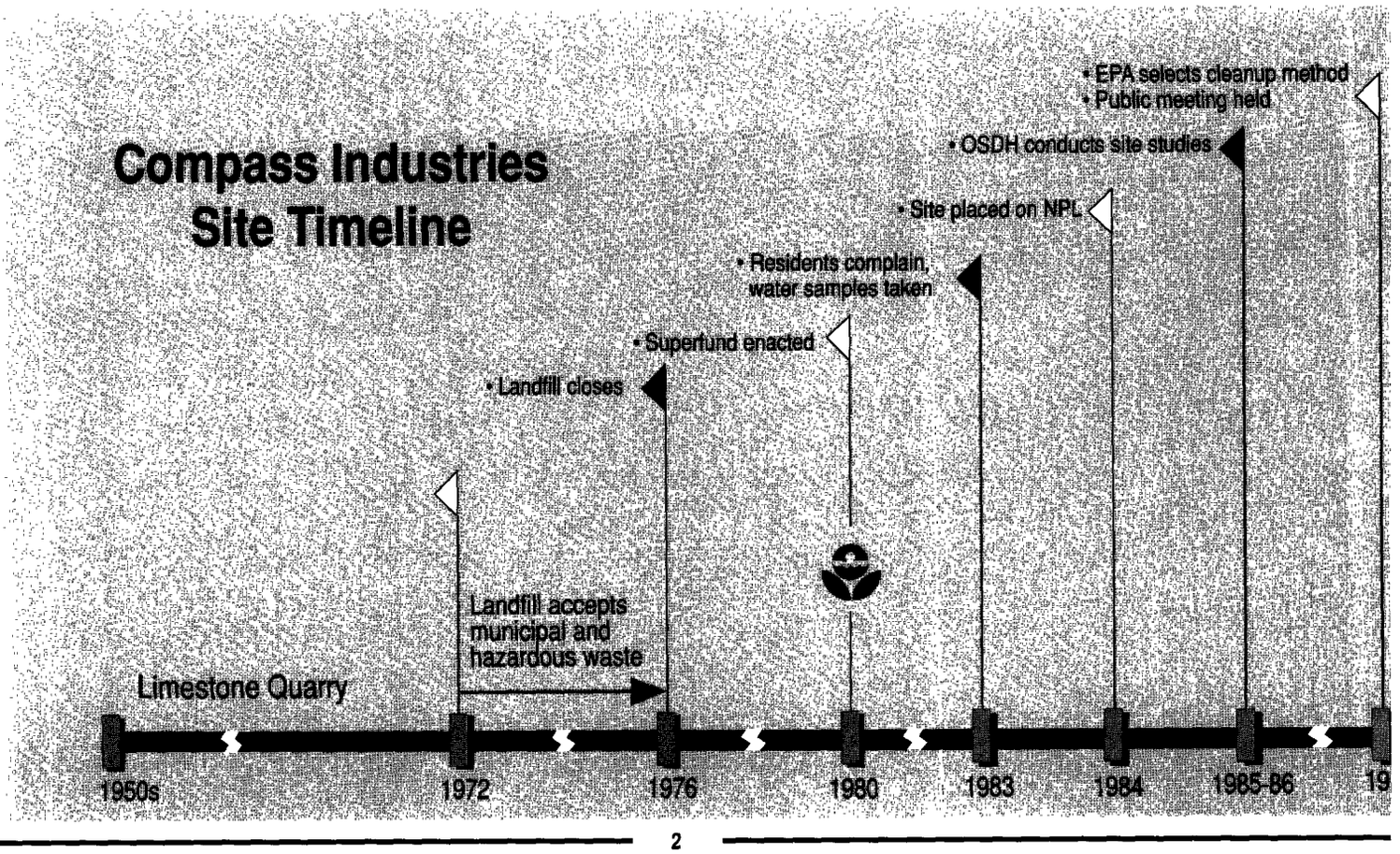
A Site Snapshot

The Compass Industries Superfund site was a 46-acre abandoned landfill eight miles west of Tulsa, Oklahoma. The site perched 200 feet above the Arkansas River; runoff from the landfill trickled down the bluff to the river ecosystem below.

The Compass Industries site was originally a limestone quarry from the 1950s until the late 1960s. For more than a decade, operators converted the quarry into a major municipal landfill for the Tulsa area, accepting both household garbage and industrial wastes. Poor operating practices led to the landfill's eventual closure.

The site is directly west of Chandler Park, a county softball and recreational area; the closest residence is within a quarter mile. Local residents complained about poor air quality and noxious smoke and soot from fires burning at the landfill. Soil samples later revealed solvents, heavy metals, pesticides, and polychlorinated biphenyls (PCBs). Exposure to these toxins can cause central nervous system disorders and increase the risk of various cancers. Seasonal precipitation leached unknown quantities of hazardous substances into surface and ground water causing insidious environmental effects.





Waste Contributors Bite The Bullet, Take Responsibility

Out of Sight, Out of Mind

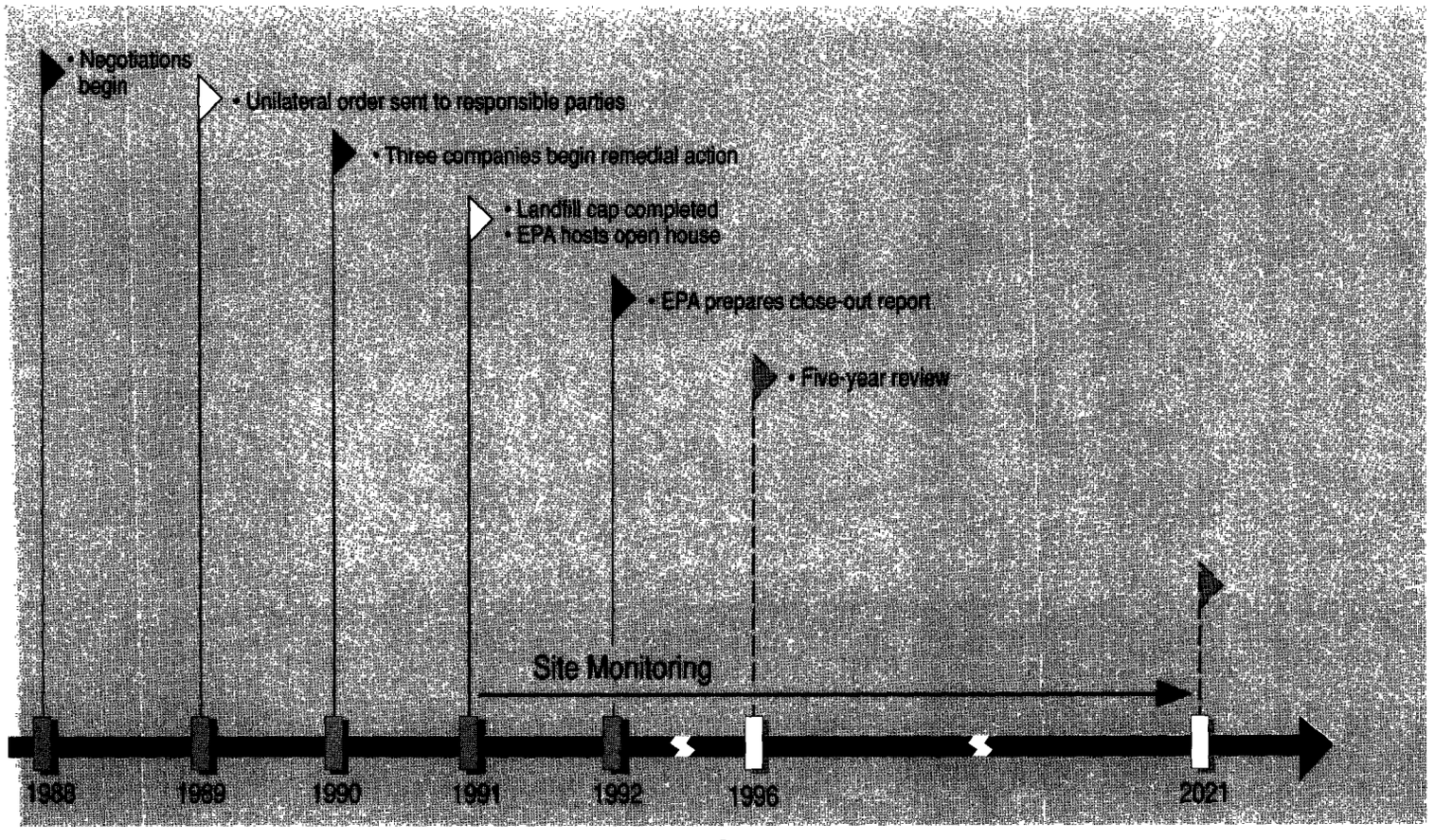
Like so many other landfills across the states, the site owners saw an old quarry as the ideal place to throw stuff away. The City of Tulsa was growing and expanding, trying to meet the needs of oil drilling and refining companies that sprang up all over the southwest. City and county officials petitioned the Oklahoma State Department of Health (OSDH), which granted a permit to the Compass Industries landfill for disposal of municipal waste from 1972 to 1976. State investigations would later reveal, however, that hazardous waste dumping may have taken place as early as 1964. Twenty years later, the landfill contained a volatile mix of oily sludges, jet fuel, bleaches, solvents, benzene, PCBs, and pesticides.

Fires and Air Pollution Cause Complaints

In early 1983, EPA and OSDH investigated residents' reports about open burning and soot in the air and took water samples. The site had come under scrutiny following passage of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Under this new law, Congress empowered EPA to begin cleaning up uncontrolled hazardous waste sites across the nation. Instead of using taxpayer dollars, a "Superfund" based on excise taxes levied on chemical feedstocks and crude oil would support cleanup efforts. States nominated their worst sites; Compass Industries was placed on the National Priorities List (NPL) in 1984.

State Conducts Field Studies

For the next two years, OSDH contracted with EPA to conduct comprehensive site studies to determine the nature and extent of site contamination. EPA weighed the options and selected a remedy to stabilize and contain the site wastes.

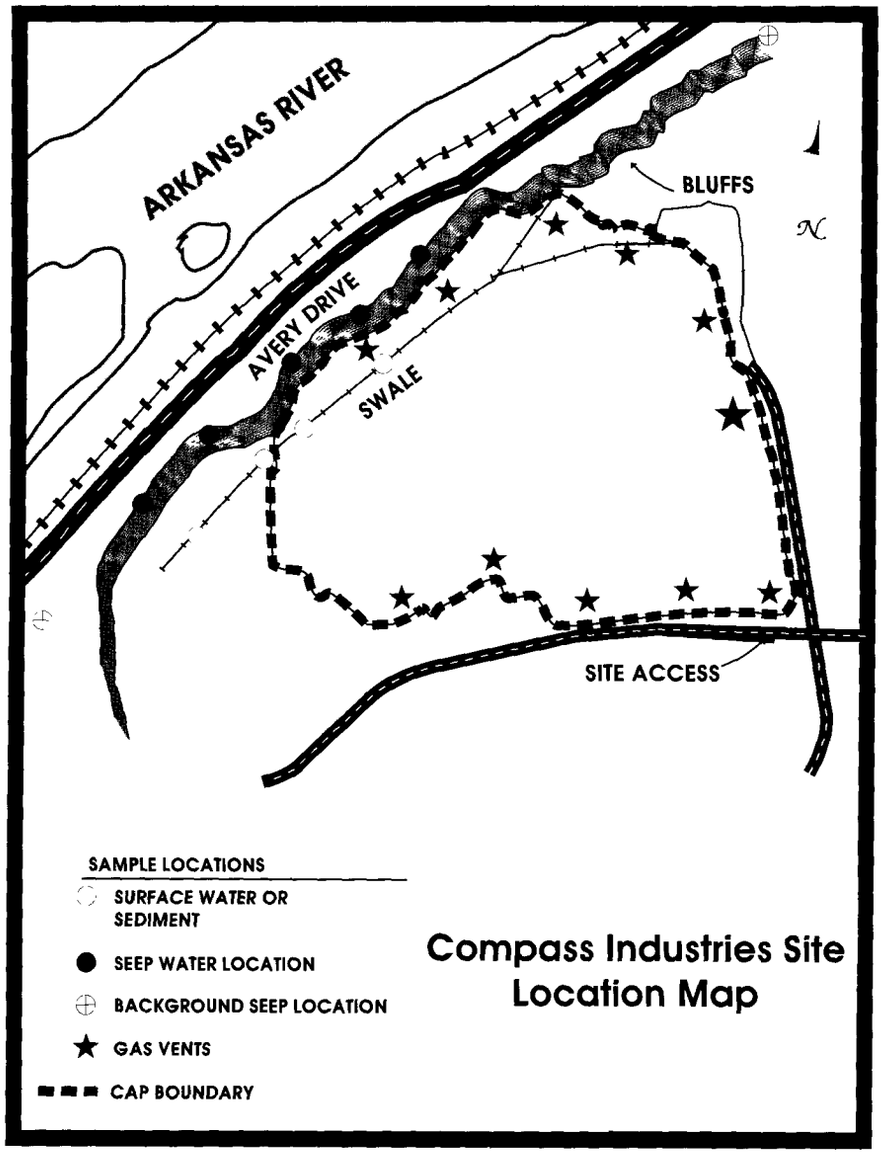


for Others

In 1987, EPA presented a proposed cleanup plan to the community that included capping the landfill, ground water treatment, if necessary, and a 30-year monitoring program.

EPA Negotiates for Cleanup

Having searched old records and deposit slips maintained by the former operators of the site, EPA identified the major waste contributors and transporters. Negotiations commenced in 1988 but failed to coalesce a group that would assume financial responsibility. EPA proceeded to design the selected remedy using Superfund resources, and then in 1989, issued a unilateral administrative order to seven parties. Only Texaco, Inc., Standard Royalties Inc., and Sun Refining and Marketing Corporation agreed to perform the remedial work which mobilized in the winter of 1990. EPA continues to pursue other parties to recover cleanup costs and is close to concluding agreements with waste contributors who sent very small quantities of hazardous substances to the site.



Compass Industries Site Location Map

Remedial Work Takes Less Than Two Years

Once under way, construction crews built access roads, began controlling surface runoff from the site, and provided 24-hour security. EPA entered into an interagency agreement with the U.S. Army Corps of Engineers to oversee the work. Crews installed a multi-layer cover over the landfill with a high density polyethylene liner to exclude precipitation. Engineers included a methane ventilation system to relieve gas buildup under the cap and prevent recurrence of underground fires. Air monitoring equipment operated continuously and served as an early warning system to detect any toxic vapors generated by the work.

To control surface water runoff, crews had to reduce overland flows by building a drainage system to divert water to natural runoff channels of the Arkansas River. They also built an earthen berm to control erosion below the site.

Perseverance and hard work paid off with completion of the remedial action in October,

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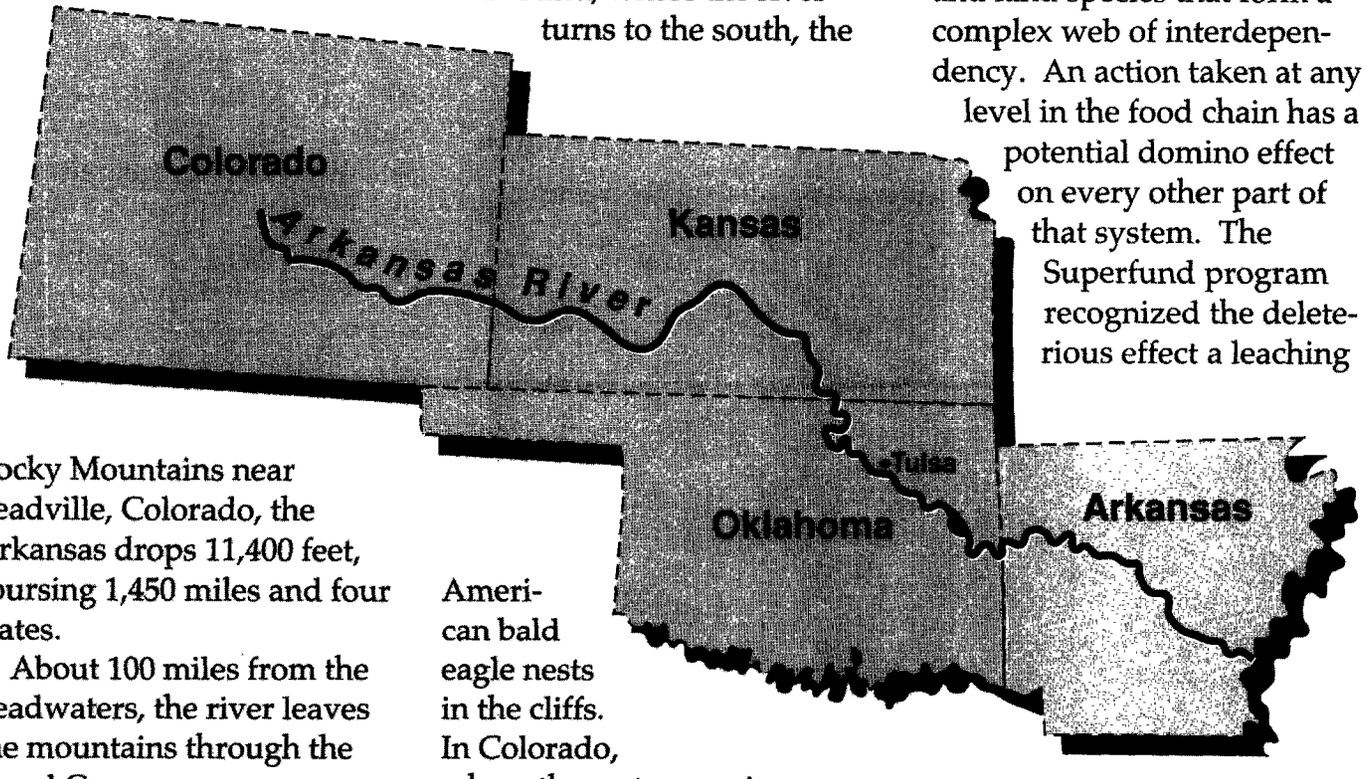
The Arkansas: River Ecosystem Supports Impressive List of Species

One of the major western tributaries of the mighty Mississippi is the Arkansas, a meandering, vital river that drains a watershed of 160,600 square miles. Originating in the Sawatch Range of the Rocky Mountains near Leadville, Colorado, the Arkansas drops 11,400 feet, coursing 1,450 miles and four states.



About 100 miles from the headwaters, the river leaves the mountains through the Royal Gorge, a narrow canyon cut into solid granite with vertical walls more than 1,000 feet high. The Bureau of Land Management studied this segment of the river for inclusion in the National Wild and Scenic Rivers Program. Once on the plains, the channel becomes wide and shallow as the flow is diverted to agricultural crops all through Kansas.

Wheat is but one of the diverse species the river ecosystem supports. Vast segments are within the Central Flyway, a major migratory route for ducks, geese, sandhill cranes, warblers, and other songbirds.

At Tulsa, where the river turns to the south, the American bald eagle nests in the cliffs. In Colorado, where the waters are icy cold, trout species abound. At the opposite end in Arkansas, the paddlefish with her spatula-shaped snout, produces the best caviar in the continental U.S. The beavers of old once plied the wetland backwaters before fur traders nearly wiped out this industrious aquatic mammal. Today, 17 locks and dams control the Arkansas' yearly flooding and provide a navigable waterway for shipment of the river basin's resources.

Not just a body of water for wastes and industrial effluent, the river is a living ecosystem: a synergism of plants, insects, aquatic animals, fish, birds, and land species that form a complex web of interdependency. An action taken at any level in the food chain has a potential domino effect on every other part of that system. The Superfund program recognized the deleterious effect a leaching landfill had on the segment of the Arkansas at Compass Industries and downriver. The concerted efforts of all those who worked at the site — private, state, and federal — helped to encourage the return of the natural order. The Arkansas continues the never-ending journey and supports biodiversity along the way.

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1991. The community was invited to an "open house" to ask questions about the technical aspects of the work.

Surface water samples have been taken quarterly ever since and will continue under a 30-year site monitoring program. All samples to date have tested to be clean. This year, the site will be comprehensively reviewed for effectiveness of the remedy and the possibility of delisting from the NPL.

Success at Compass Industries

State and federal efforts were aided by a comprehensive law that put responsibility in the hands of waste contributors. EPA selected and designed a remedy that was both cost effective and protective of the environment. Cooperation from private parties ensured the completion of a fairly simple solution for this Oklahoma site. Cost recovery efforts continue for recalcitrant parties.

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