

CARSON RIVER MERCURY SUPERFUND SITE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION



CONSOLIDATED VIRGINIA AND CALIFORNIA MINE 1875

PRESENTATION OUTLINE

- WHAT IS SUPERFUND?
- CARSON RIVER MERCURY SUPERFUND SITE HISTORY
- CRMS MANAGEMENT BY NDEP
 - Health Risks
 - Residential Development
 - Non-residential Development
- CURRENT EVENTS

What is Superfund?

Superfund is the common name given to the law called the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 or CERCLA.

Love Canal, Niagara Falls, New York



Valley of the Drums, Louisville, Kentucky

What are Superfund's goals?

1. Protect human health and the environment by cleaning up contaminated sites;
2. Make responsible parties pay for cleanup work;
3. Involve communities in the Superfund process; and
4. Return Superfund sites to productive use.



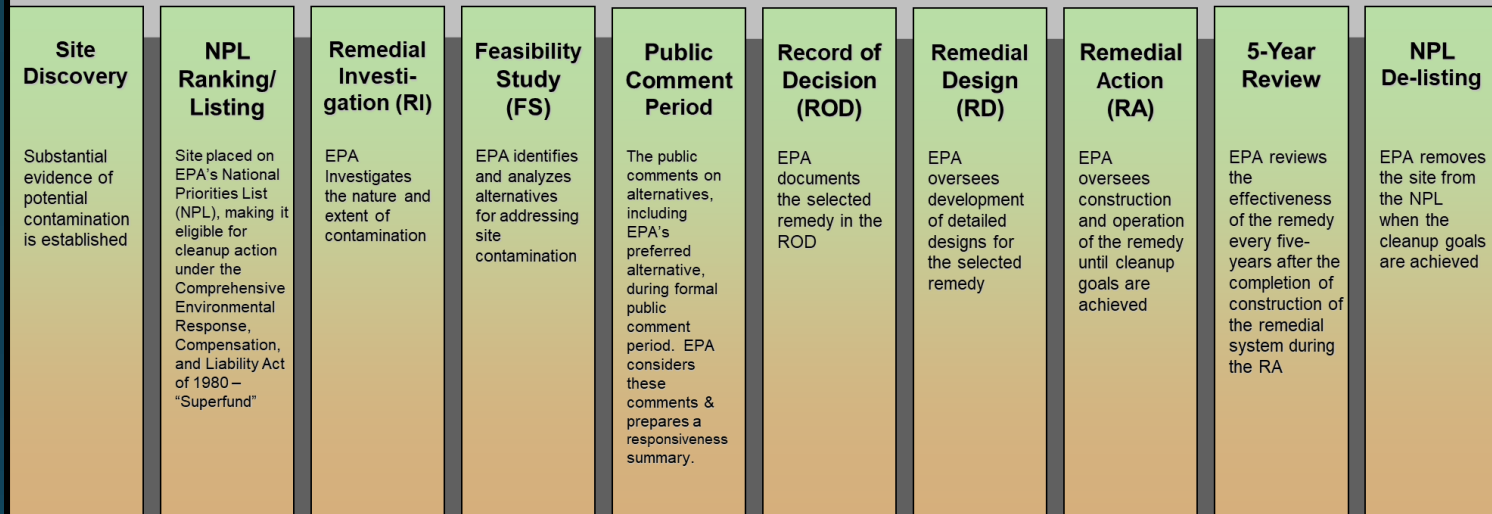
Residential
development



Commercial
development

CARSON RIVER MERCURY SUPERFUND SITE

The Superfund Process



Enforcement Activities Occur Throughout the Superfund Process

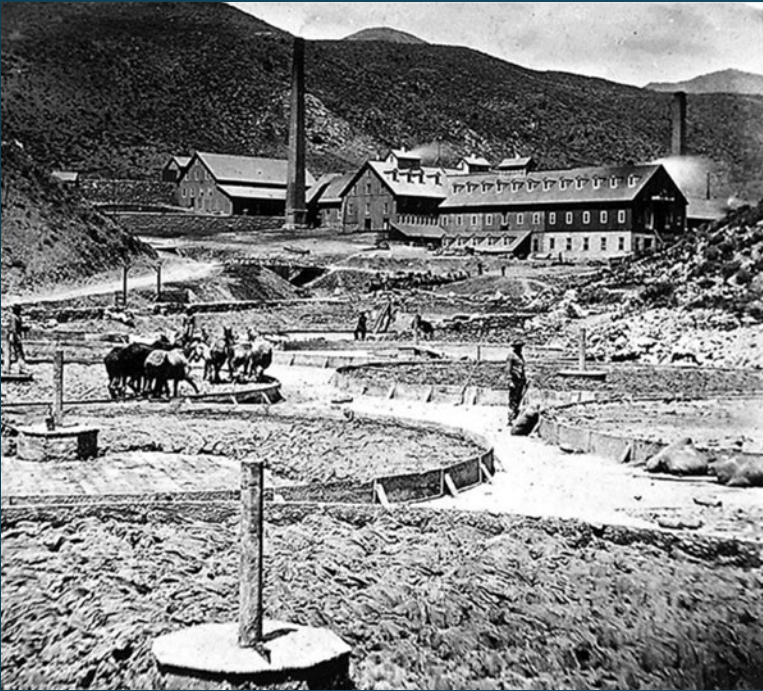
CARSON RIVER MERCURY SUPERFUND SITE (CRMS)

HISTORIC BACKGROUND

- Gold and silver mining and milling commenced in the 1850s mainly in Virginia City, Silver City, Six Mile Canyon, Gold Canyon, Dayton and Washoe Valley area.
- 236 historic mill sites in area.
- Ore processing operations resulted in ~14,000,000 pounds of mercury released to the Carson River drainage and a portion into Washoe Lake.
- Sampling of Carson River sediments by the USGS in the 1970s first shed light on the issue.
- In 1990 the site was officially designated a National Priority Listed (NPL) site under CERCLA.
- Nevada's only Superfund site is jointly managed by NDEP and the EPA Region IX office.



CARSON RIVER MERCURY SUPERFUND SITE



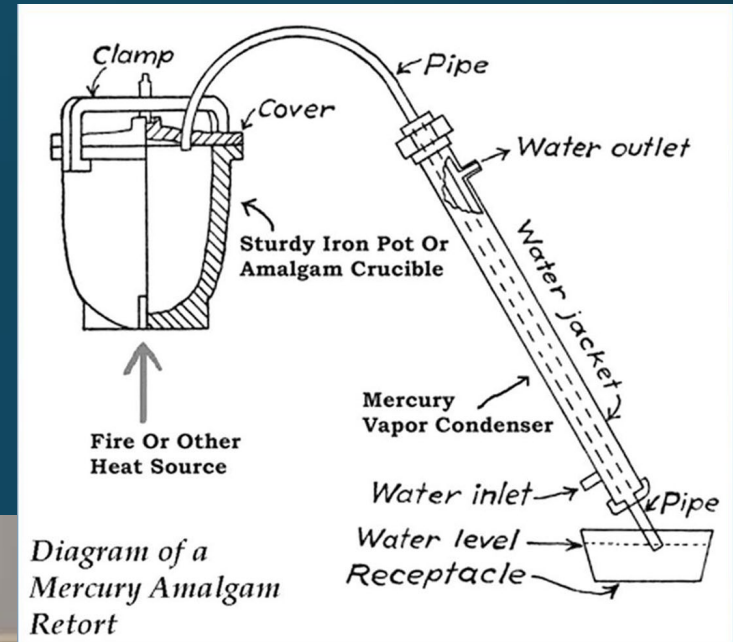
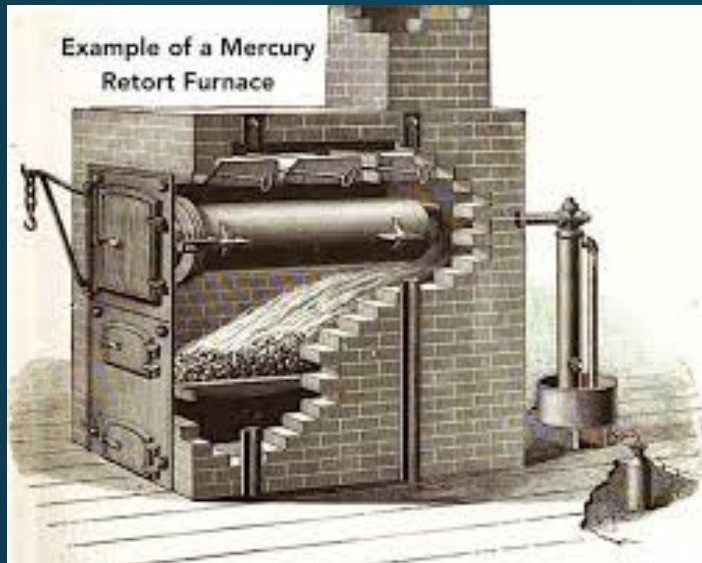
Patio process:

- Amalgamation process to extract silver and gold ore using salt and copper sulfate in addition to mercury.
- Mule power and arrastras.

Washoe process:

- Replaced copper pans with iron tanks and mechanical agitators.
- 60-70 pounds mercury, 1-3 pounds salt and copper sulfate.

CARSON RIVER MERCURY SUPERFUND SITE

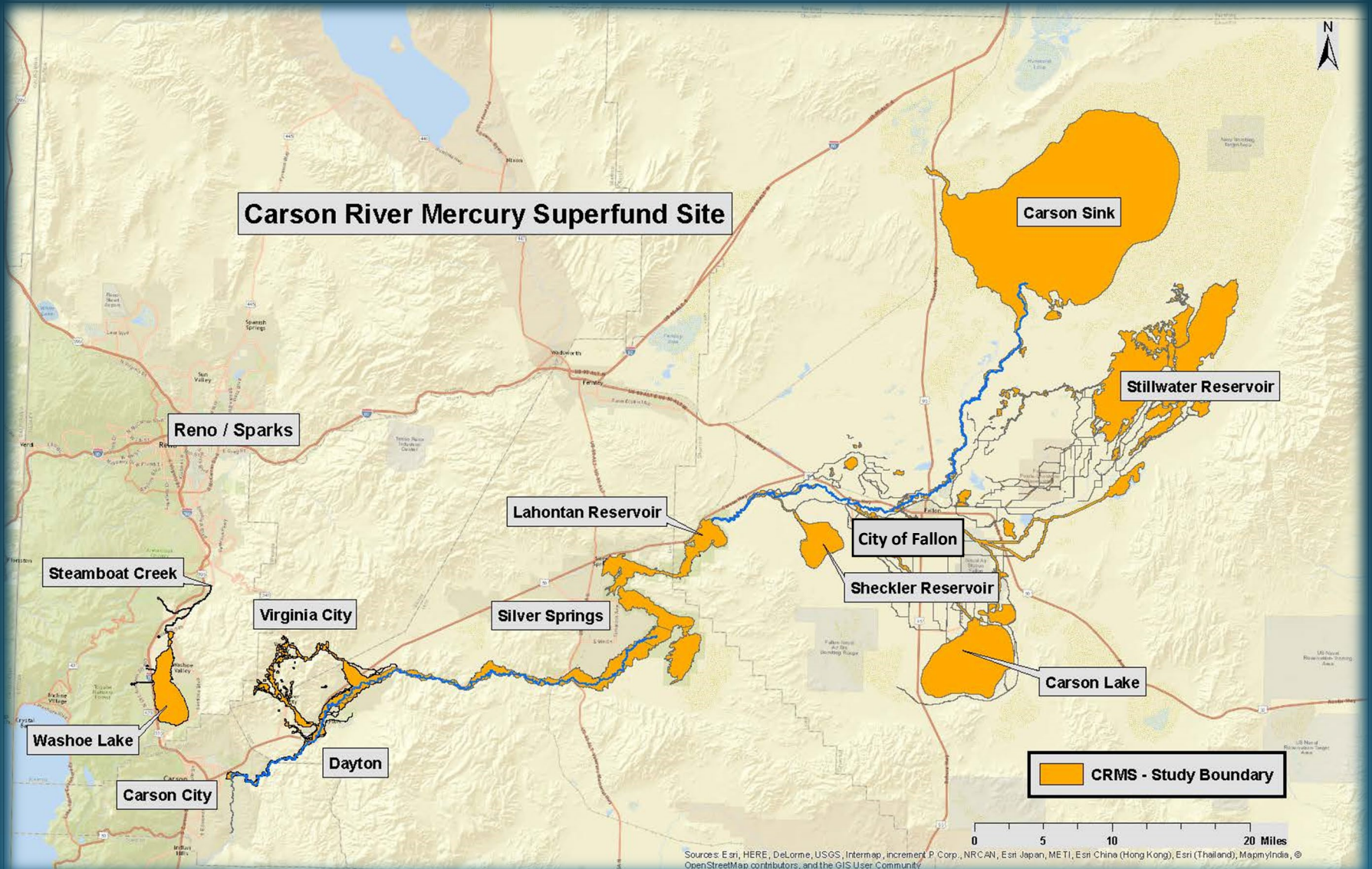


Mercury amalgamation and retorting:

- Alloying and collection of fine gold-silver particles in puddles, droplets, or coatings of mercury.
- Mercury is collected and heated away from the metals and recondensed in a retort for reuse.

- ~80% efficiency for gold-silver recovery.
- Loss of mercury over time due to the several steps involved in the metallurgical process.


CARSON RIVER MERCURY SUPERFUND SITE




CRMS MANAGEMENT BY NDEP

1. REDUCE HUMAN CONSUMPTION OF FISH CONTAINING MERCURY FROM CRMS AFFECTED LAKE AND RIVER SYSTEMS THROUGH HEALTH ADVISORY AND PUBLIC OUTREACH.
2. MANAGE MERCURY, ARSENIC, AND LEAD-IMPACTED SOIL IN RESIDENTIAL AREAS TO REDUCE FREQUENT DIRECT CONTACT BY CHILDREN UNDER THE AGE OF 6 YEARS OLD THROUGH SOIL SAMPLING AND MANAGEMENT PLANS.
3. WORK WITH THE AFFECTED COUNTIES ON NOTIFICATION OF SINGLE-FAMILY HOME DEVELOPMENT.
4. COORDINATE WITH NON-RESIDENTIAL DEVELOPERS.

CRMS MANAGEMENT BY NDEP HEALTH ADVISORY SIGNAGE



HEALTH ADVISORY





 **FISH IN THESE WATERS
CONTAIN HIGH LEVELS
OF MERCURY AND
SHOULD NOT BE EATEN**

**Mercury is known to cause birth defects in infants
and nerve damage in adults**


PRACTICE CATCH AND RELEASE




For more health advisory information:
<http://www.epa.gov/mercury/advisories.htm>
<http://www.eps.gov/espanol/mercurio/-Español>
http://www.ndow.org/fish_safety/mercury/

EPA: English EPA: Español NDOW: Mercury


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CRMS MANAGEMENT BY NDEP

MANAGING MERCURY-IMPACTED SOILS

- Soil removal or capping with two feet of clean soil for mercury >80 ppm, arsenic >32 ppm, and lead >400 ppm.
- Environmental covenants. Durable notification.
- Collaboration with non-residential developers, municipalities, and utility companies.
- Residential Long-Term Sampling and Response Plan (LTSRP) guides development.

CRMS MANAGEMENT BY NDEP

RESIDENTIAL LTSRP

- Requirement of the EPA Superfund Record of Decision and Human Health Risk Assessment to address the public health risk associated with mercury-impacted soils.
- A guidance document which has successfully managed mercury impacted soils in residential developments through early communication with developers.
- Provides a clear sampling, analysis and response plan for proposed disturbance of soils within potentially impacted areas.

CRMS MANAGEMENT BY NDEP RESIDENTIAL LTSRP (CONTINUED)

1. Developer submits sampling and analysis work plan to NDEP for review and approval.
2. Developer samples top 2 feet of soil in individual lots based on proximity to former mill sites and 100-year flood plain.
3. If mercury, arsenic or lead is discovered above action levels, the developer removes or caps impacted soil.
4. Impacted soil can be placed under a roadway, sidewalk, etc.
5. Environmental covenant attached to the title stating the sampling and mitigation was completed.

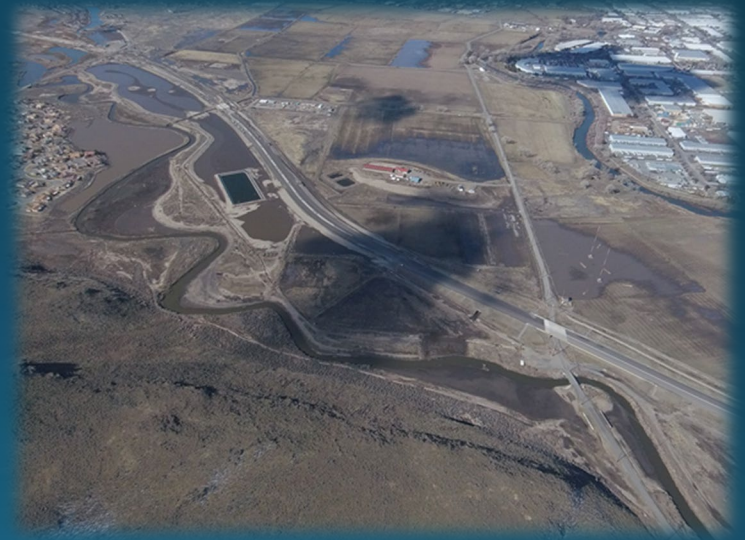


NDEP INVOLVED IN ALL STEPS OF PROJECT

CRMS MANAGEMENT BY NDEP COLLABORATION WITH NON-RESIDENTIAL DEVELOPERS

ENSURES MERCURY IMPACTED SOILS FROM A
NON-RESIDENTIAL UNDERTAKING WILL NOT BE
UTILIZED IN A RESIDENTIAL CAPACITY.

1. Again, sampling and analysis plan submitted to NDEP for review and approval.
2. Area of proposed disturbance is sampled.
3. If mercury, arsenic and lead are discovered above the action levels, mitigation follows.



NDEP INVOLVED IN ALL STEPS OF PROJECT

CRMS MANAGEMENT BY NDEP

COLLABORATION WITH NON-RESIDENTIAL DEVELOPERS

(CONTINUED)



4. Mitigation based on type of development. Examples:
 - Removes and caps the soil by placing under a roadway/ sidewalk/ etc. (Southeast Connector)
 - Returns soil and caps in place (Comstock mining and Virginia City sewer project).

NDEP INVOLVED IN ALL STEPS OF PROJECT

CRMS CURRENT EVENTS

- The Infrastructure Investment and Jobs Act has infused funding into this fund-lead site for more soil sampling and cleanup. \$5M so far.
- Support available for single-family residences starting in August.
- Continuing stakeholder interviews and engagement to support communication plans and outreach.
- EPA is working on another record of decision for the Carson River corridor to support long-term management efforts. Your packet handout.

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