NDOT NEWS
SPECIAL EDITION

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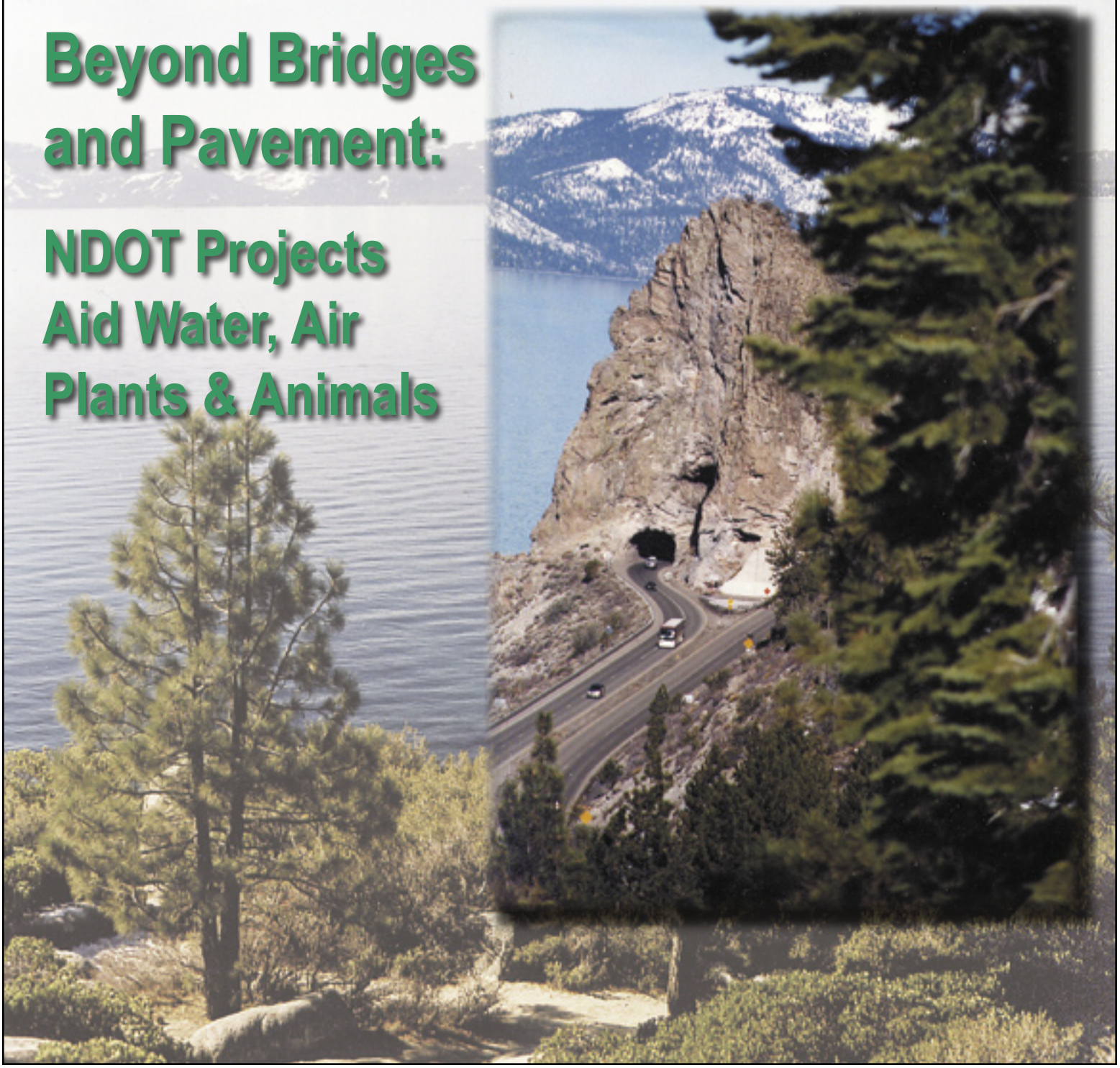
NEVADA DOT

NDOT NEWS

Quarterly News of the Nevada Department of Transportation

Beyond Bridges and Pavement:

NDOT Projects Aid Water, Air Plants & Animals



The Director's Corner

Tom Stephens, P.E.,
Director

Environmental Protection a Challenge in Arid State

NDOT works hard to protect and enhance the environment to mitigate the effects of our work and to provide a safe and effective highway system for Nevadans. A few of the things we have done over the past eight years are illustrated in this "green" issue of the NDOT News.

Nevada is a land of sharp contrasts. As the most arid state with less than 10" of rainfall, it nonetheless has surprisingly large desert lakes. It has both wide-open spaces, and one of the states' most urban populations, concentrated in the Las Vegas and Reno metropolitan areas.

Nevada is a challenge for those seeking to blend highway projects into the environment. Without sufficient water to create lush vegetation, planners work with native plants and design elements. The State Transportation Board has committed NDOT to create transportation projects with aesthetic considerations in mind. Last year, board members voted to spend three percent of the construction and capacity project budgets on landscape elements. The board adopted a broad-based committee report entitled "Pattern and Palette of Place: A Landscape and Aesthetics Master Plan for the Nevada State Highway System."

Committing resources to aesthetics is important to show our respect for the state and to welcome visitors. Landscape and aesthetics master planning can improve the driving experience by reducing glare, separating oncoming traffic and improving the visual quality of our highways.

Landscape projects can also enhance wildlife habitat. But devoting resources to wildlife is more than planting vegetation to create habitat along roadways. NDOT is charged with mitigating disturbances to the environment caused by transportation projects.

Within this issue you will see projects mandated by law, such as preserving desert tortoises, as well as those adopted for humane and safety reasons, such as the warning reflectors designed to keep wild horses off Highway 50 near Dayton.

NDOT has also undertaken successful creation of wetlands in Washoe Valley. The wetlands encourage a diversity of wildlife and thriving native plants. The creation of wells and levees ensure that water will always be in the wetlands, even in dry years.

This special edition of the NDOT News looks at the wide-ranging efforts help the environment: from reducing salt usage on roadways at Lake Tahoe, to noise reduction, improving air quality and preserving Nevada's history with enhancement projects.

Editor's note: Tom Stephens is retiring from state service after more than eight years as director of the Nevada Department of Transportation; three years as manager of the State Public Works Board; and eight years as a member of the Public Service Commission, including four years as chairman.

On The Cover:

Cave Rock on US-50 abutting Lake Tahoe shows the challenge of operating a roadway adjacent to a pristine body of water. The Nevada Department of Transportation is charged with keeping oil and de-icing pollutants out of the lake. Working with a number of government entities has created innovative solutions. See page 7 for an article on what has been done.

Working to Preserve the Environment and Endangered Species

For an agency dealing with transportation projects, the amount of effort spent protecting animal populations is surprising. Construction of roads, bridges, culverts, etc., directly affects the environment and habitat of animals. NDOT is required to maintain an awareness of the environment and mitigate damage to habitat as much as possible.

Much of the work done by NDOT is required by law. The department has created a wetland mitigation area in northern Nevada to offset wetland losses from highway construction in the Reno and Carson City area. A mitigation ratio of 3-to-1 is used. Three acres are enhanced for every acre lost.

The creation of approximately 300 acres of wetland on the southern end of Washoe Lake is one of the department's largest mitigation efforts. Man-made ponds have been formed by levees running east-west and north-south. The water levels of the various impoundments can be controlled in spite of drought, thanks to a groundwater well, a surface water pump and other sources, including McEwen Creek.

WETLAND MITIGATION—Critical wetland habitat can be successfully created as shown here in Washoe Valley. The project consists of 14 water impoundments created by five main levees and two cross-levees.

To make the habitat as beneficial as possible, nesting islands have been created, and native water-loving plants like hardstem bullrush, cattails and pondweed have been planted. Native fishes have also been imported to several of the ponds.

Since the completion of the wetland in 1999, a few of the waterfowl attracted to the area include mallards, coots, herons and Canada geese. Predators include

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red tail and rough tail hawks, eagles and ospreys.

One of the most inspiring sights at Washoe Lake and the wetland is the American white pelicans that fly in from Anaho Island at Pyramid Lake to feed on catfish and carp.

ENCOURAGING WORK—Nesting boxes designed to foil predators are part of the habitat improvement in wetlands south of Washoe Lake. The boxes and baskets encourage breeding in wetlands. Dan Rice, senior development technician for NDOT, places one of the nesting boxes he built.

Though the wetland development, costing about $3 million, is essentially complete, the department is still improving the area for waterfowl. Dan Rice, senior development technician of NDOT environmental services, is encouraging the population of waterfowl in the wetlands area by building and installing nesting boxes. The wooden boxes were installed in time for the spring nesting season in 2002, and all were occupied by breeding pairs. The nest boxes attract ducks such as the common goldeneye, hooded merganser and wood duck. To attract mallards a mesh basket is used.

The public is invited to see the fruit of NDOT's labors. A viewing area, complete with mounted binoculars, is open at the south end of the wetland. Even commuters on busy US 395 between Reno and Carson City, which borders the wetland, can enjoy a glimpse of a pelican, hawk or duck.

INSTALLERS—Strieter reflectors are mounted on posts away from the shoulder of the road so the posts themselves are not a hazard to motorists or maintenance work. Doing the installation are highway maintainers Byron Fillmore and Joe Smaltz from Crew 272.

Wild Horses

NDOT also undertakes animal protection projects for humanitarian or safety reasons. In an effort to cut down on the often tragic consequences of wildlife colliding with motor vehicles, the agency installed a new reflector system to warn deer and wild horses to stay off the roadway when traffic is present.

A three-mile section of US 50 east of Dayton was outfitted in 2002 with a Strieter reflector system

WILDLIFE PROTECTOR—The "Streiter-Lite" reflector is designed to warn wildlife away from the roadway. The Nevada experiment will be the first to see if the reflectors work on wild horses.

used in several other states to keep wildlife such as deer and elk away from traffic.

"We chose the section of Highway 50 near Dayton because that is a migratory deer route and also has wild horses that stray onto the roadway," Gail Bellenger, NDOT staff biologist, said.

This is the first time the reflectors have been tested on a wild horse population, but it has proven effective in other areas for a wide range of animals, including herbivores like deer, elk and moose, and predators like foxes and coyotes.

Bears

NDOT also developed its own design for a highway warning sign to protect bears in the Lake Tahoe Basin. In 1999, a mother bear and two cubs wandered onto US 50 and were killed in an automobile collision. That brought to nine the number of bears known to be killed in automobile crashes on the highway in the east Tahoe Basin. Six of those collisions were in the Spooner Summit area where US 50 meets State Route 28, a favorite spot for the animals to cross to higher elevations. Working with the local group concerned with the animals' welfare, NDOT agreed to design "bear crossing" signs and post four of them in the region to warn motorists.

HANDLE WITH CARE—NDOT senior biologist Julie Ervin-Holoub teaches highway maintainers in the Las Vegas area how to handle desert tortoises when the reptiles have to be moved for their safety. Classes are held at the Desert Tortoise Conservation Center.

Desert Tortoises

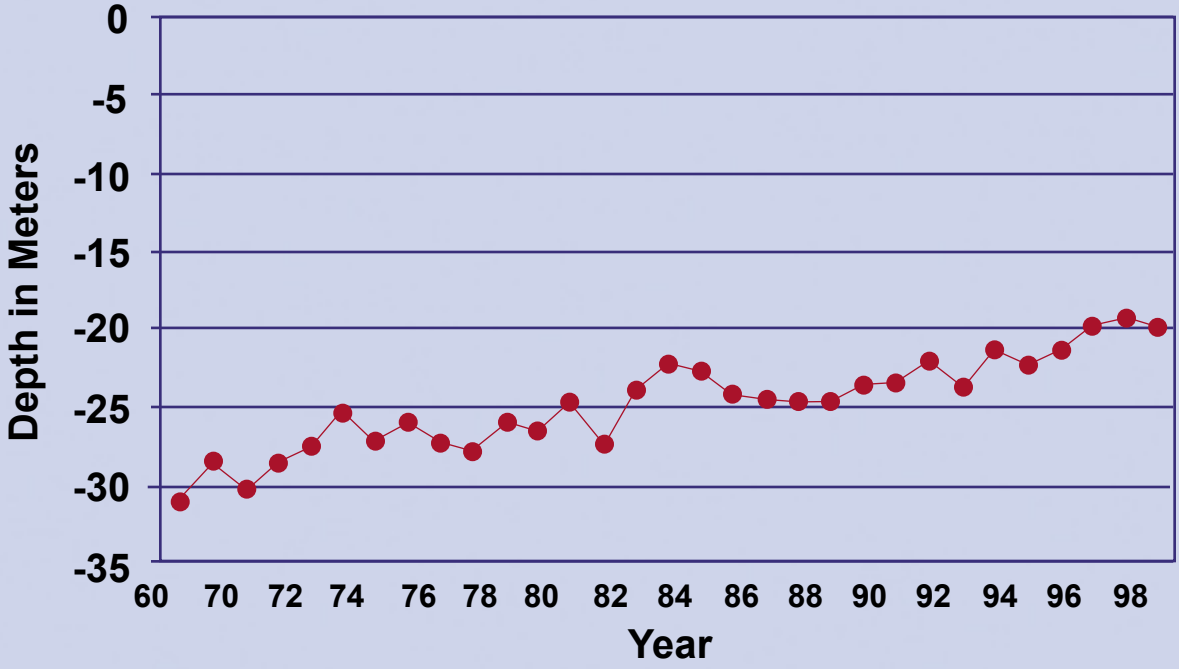
In southern Nevada, desert tortoises are threatened by development and transportation projects which often destroys their habitat. NDOT is required to offer training on how to handle desert tortoises found at NDOT construction sites or within rights-of-way. Only those trained to handle tortoises are allowed to move them.

Training NDOT employees to properly handle tortoises is only one part of a major effort to preserve them. NDOT, Clark County, the cities of Las Vegas, North Las Vegas, Henderson, Mesquite and Boulder City are part of an agreement that requires the Department of Transportation, or its partner agencies, to contribute $550 to $633 per acre disturbed by a project, to the Clark County Conservation Fund. The U.S. Fish and Wildlife Service oversees the fund, and the money is used for conservation measures.

Desert tortoises are being prevented from crawling onto I-15 and other roadways by barricades of one inch by two inch mesh fencing that stretches two feet above ground and at least six inches below. The fence allows smaller animals to get through and larger animals, such as bighorn sheep and coyotes, to go over.

YIELD TO BEARS—Nevada's unique bear signs are designed to increase motorist awareness where the animals tend to cross the roadway.

Forty-Year Problem at Tahoe: Holding on to the Lake's Clarity



The lake's clarity is diminishing at a rate of one foot each year. In 1968, a 10-inch disk could be seen from a depth of 105 feet; in 1998 it could be seen at 70 feet.

New Pollution Controls Reduce Contamination

Known as the "Jewel of the Sierra" and referred to by Mark Twain as, "the fairest picture the whole earth affords," Lake Tahoe is known worldwide for its beauty and clarity.

The famed blue waters attract many, but those same admirers pose a challenge for keeping the lake clear. Visitors and residents use the narrow winding lakeside road that takes the brunt of the harsh winter climate of the Sierra Nevada Mountains. The weather quickly ages pavement and requires winter de-icing treatment to remain open.

In the summer, recreationists use the roadside to park their vehicles and runoff carries oil, grease and other pollutants into the lake.

Water quality is a chief concern for all of those who love the lake. A presidential summit in 1997 focused attention on Tahoe's complicated environmental issues. A multi-agency team working with NDOT to develop a master plan for erosion control and storm water management was among active groups involved in the summit.

But NDOT did not wait until national attention was focused on the lake. In 1995, NDOT launched an aggressive four-year, $5 million roadway water quality improvement master plan.

A two-mile water quality demonstration project was completed in 1996 along the east shore. Lessons learned from this project resulted in a partnering process with 15 agencies in 1997, culminating in a water quality master plan along eight miles of S.R. 28 and nine miles of U.S. 50.

The NDOT Environmental Improvement Master Planning Program (EIMP) will consider and account for all future transportation, transit, recreational, environmental and capital improvement projects by NDOT and other entities. With cooperation of all concerned agencies in the basin, the EIMP will address project priorities, staging, costs, and right-of-way needs.

AWARD WINNERS—NDOT engineer Theresa Jones and Hydraulics Division Chief Amir Soltani were part of the team to earn the Federal Highway Administration's 1999 Environmental Excellence Award for Water Quality. Fewer dissolved minerals and particles were discharged into Lake Tahoe after installation of sediment catchments and oil and water separation facilities. Jones and Soltani are shown alongside drainage improvements that are part of the State Route 28 project.

Since 1997, NDOT's team of engineers, scientists and planners has been working in partnership with interested agencies in the master planning efforts. The partnering process allows all members to share their short and long-term objectives within

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the basin with others. They can identify joint projects, set project priorities, discuss funding mechanisms and address design issues. Together, more than 40 individuals from various organizations contribute their varied expertise in the decision making process.

NDOT is cooperating with local agencies to implement a 10-year $74 million master plan for 39 miles of roads in the basin. NDOT's approach has been to actively involve stakeholders at all levels, public and private. The multi-faceted, four-year program to improve water quality has already resulted in the reduction of pollutants in the lake. There is currently 15 percent less phosphorous, 20 percent less dissolved iron and 65 percent less suspended sediment discharged from NDOT roadways where sediment catchments and oil and water separation facilities have been constructed.

> "Partnering, at the initial phase, is time consuming, but agencies can ultimately save a lot of time and have a quality product that is accepted instead of litigated"
> --Amir Soltani, Nevada Department of Transportation

"Our main effort is to minimize discharge of sediment and roadway pollutants," said Amir Soltani, chief hydraulics engineer at NDOT.

NDOT has been able to gather an impressive number of agencies and individuals to work on a common problem. "We can't do it alone," he said. "We need teamwork and the talents of others. It's a multi-agency and multi-disciplinary approach because problems with the environment know no boundaries. Dealing with a number of issues and a number of agencies is just the nature of the job."

NDOT earned the Federal Highway Administration's 1999 Environmental Excellence Award for Water Quality for projects at Lake Tahoe. The division was nationally recognized for environmental leadership, innovative processes and cooperative partnerships.

"These award winning projects show how local and federal governments, industry and community groups, can work together to make a difference building strong communities," said former FHWA Administrator Kenneth Wykle. He said the strength of the project that serves as a model for helping to build transportation systems that protect and enhance the environment.

RWIS—The Road Weather Information System consists of 58 meteorological stations strategically located along highways throughout the state. They allow the department to make more informed decisions during winter storms. Specialized equipment and computer programs monitor air and pavement temperature to make forecasts regarding how the winter storms will affect the roadways. This gives NDOT staff opportunities to use alternate de-icing chemicals, make optimal use of materials and employees, and practice anti-icing techniques developed through years of research.

RAILROADS, SIDEWALKS & LIGHTS

Enhancement Projects

How highway funds save history and encourage tourism

From the distinctive raised sidewalks of Virginia City and its Virginia and Truckee Railroad, to a beautification projects in Lovelock and Crystal Bay, Lake Tahoe, to preserving the coach shed for the Northern Nevada Railroad in Ely, enhancement funds from the Federal Highway Administration are working to protect and preserve what is uniquely Nevadan.

The enhancement funds will benefit communities and visitor attractions for years to come as the funds, in the case of the railroad shed in Ely, preserve an important part of the state's past that would probably otherwise fall to ruin.

For the V&T Railroad, the NDOT project of $585,000 provided for engineering and right of way needs, environmental assessment and plan preparations.

In 1992, the Virginia & Truckee Historic Railroad Society initiated a community effort to acquire and protect the existing V&T Railroad operating right-of-way from further encroachment. With the ultimate goal of operating a tourist railroad, the funds were needed to develop a detailed program of reconstruction.

LAMPPOSTS AND LANDSCAPING—An NDOT enhancement project at Crystal Bay, Lake Tahoe paid for part of the landscaping and other aesthetic treatments. Enhancement projects have benefited numerous areas of the state.

The total cost to create the 17-mile railroad from Deer Run Road at US 50 to Virginia City is expected to be $24-$30 million. An NDOT contract for one mile of track is expected to go out to bid in this year. Federal funds of $2.1 million and supplemental funds raised by the Northern Nevada Railway Foundation will pay for extending the existing track at Gold Hill.

Janice Ayers, a member of the Nevada Commission to Reconstruct the Virginia and Truckee Railroad and president of the Northern Nevada Railway Foundation, Inc., said: "We're working closely with NDOT in all phases of the completion. We're on the same page of music to build this railroad, which will be the legacy of everyone involved in it.

"The railroad will not be visited just by people in the United States; people in Europe are nutty about railroads. NDOT wants to see this project go as much as anyone else. It's their legacy, too," Ayres said.

Tourist mecca Virginia City is known for its wooden sidewalks, saloons and Victorian mansions. NDOT

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is helping to preserve the Old West flavor of the town by assisting with planning for restoration of a boardwalk, gas style electric lights and kiosks. The $463,000 grant will facilitate a boardwalk from the Fourth Ward School to the Presbyterian Church on C Street, access stairs from C Street to B Street and C Street to D Street. Planning and design of streetlights along C Street will also be funded with the NDOT grant.

COMSTOCK CLIMBERS—Helping to preserve the Old West flavor of Virginia City, an enhancement project assisted with planning for restoration of a boardwalk, gas style electric lights and kiosks.

In Ely, the Northern Nevada Railway Museum received a grant of $440,000 for preliminary engineering work to prepare plans, specifications and estimates to stabilize the coach shed.

Improvements in Lovelock included a $684,000 enhancement grant for plans for new sidewalks with curb and gutter, streetlights, pedestrian amenities and landscaping.

RESTORATION—The White Pine Historic Railroad Foundation has done an excellent job bringing back the rail line established by Kennecott Copper. The coach shed was in danger of collapsing prior to the restoration work.

Advocating Best Management Practices To Reduce Erosion and Water Pollution

Emphasis on erosion control and water quality is going to mean more work for contractors, NDOT and regulatory bodies, but the benefit will be cleaner water that will benefit animal populations and water resources.

"Together with Environmental, Roadway Design, Construction, and others, we are developing a water quality, erosion and sediment control program that defines and connects all phases of a project; to include planning, regulatory permitting, design, construction, and maintenance to meet regulatory requirements," said Kerri Williams, staff engineer in the Hydraulic Engineering section of NDOT. "Our goal is to minimize erosion and reduce pollutant discharge from the NDOT right of way and protect sensitive waters."

It's an ambitious program, requiring rapid development and considerable teamwork, one that involves both temporary and permanent efforts to maintain water quality.

Previously, only projects disturbing five acres or more required a permit administered by the Nevada Department of Environmental Protection. Now construction projects of one acre or more fall under phase two of the National Pollutant Discharge Elimination System. These projects also require implementation of a Storm Water Pollution Prevention Plan (SWPPP).

The Federal Highway Administration also has a program requiring temporary erosion and water quality plans in the final plans, specifications and estimates.

An example of major rilling caused by impervious surface contact with unprotected soil. After repairing the slope, the area might be covered with an erosion control blanket and seeded.

A sediment basin in the Lake Tahoe area--Articulated concrete blocks are used as flexible lining for erosion control where deep or rapid water may cause a stability problem.

Obviously, there are many projects in Nevada that have only a small potential for affecting water quality. In those cases, no temporary erosion control plans will be required.

For other projects with a large potential for water quality impact, "we're looking at best management practices (BMPs) to minimize water pollution," Williams said. To control erosion we can use vegetation and mechanical means. For sediment control we can collect and control discharge."

Techniques such as silt fences, sediment traps, fiber rolls, mulch, and check dams have been used for some time at Lake Tahoe to prevent the delicate environment during construction. These practices will be more prevalent statewide under the new guidelines, as will permanent best practices such as sediment traps, infiltration basins, slope protection and lined channels.

The new structural BMPs can be engineering projects of their own, requiring site planning, calculations of runoff and sediment loads, design of facilities, and creation of detailed specifications.

Contractors will be required to prepare temporary structural and non-structual BMPs during construction complete with site description, expected construction schedule, and details of erosion and dust control.

"These BMPs may take some getting used to," Williams said, "but they are effective." Studies have shown that properly designed erosion and sediment BMPs in the construction and post-construction phase reduce sediment to a negligible level.

Sound Walls Protect Residents from Freeway Noise

No one wants to be assaulted by the sound of sound of heavy truck and car traffic in their home, and the universal polluter—noise—is where NDOT spends the majority of its abatement funds.

The main weapon against freeway noise is sound walls, and between 1975 and 2001 NDOT spent $19.8 million creating 23.4 miles of concrete block, pre-cast concrete and berm-type barriers throughout the state.

Last year, one of the larger projects was creating 5.74 miles of sound walls on I-515 in Las Vegas from Lake Mead Drive to US 93, at a cost of $8.4 million. The good news is that the federal government sets the standard on noise barriers and provides nearly 95 percent of the funding. But FHWA cannot approve a project until the environmental impacts are addressed.

The main weapon against freeway noise is sound walls

The threshold for mitigating noise is slightly above the background noise of a large office and normal speech and below the whine of a vacuum cleaner, the sound of a gas lawn mower, or a garbage disposal: 66 decibels or greater.

Since the 1970s, when NDOT began building sound walls, the department has formalized its policy, and now includes noise mitigation wherever traffic noise is predicted to reach 66 dB or greater and it is reasonable and feasible to do so.

A wide range of criteria is used to determine the overall reasonableness, such as the:

- amount of noise reduction provided
- number of people benefitted
- cost of the abatement
- desires of residents

A cost/benefit ratio of different abatement measures is calculated, and a cost of $15,000 per resident is considered reasonable in assessing barrier economics.

There are many instances where constructing sound walls is not productive, such as areas under a flight path or where sound walls will not reduce noise by at least 5 dB.

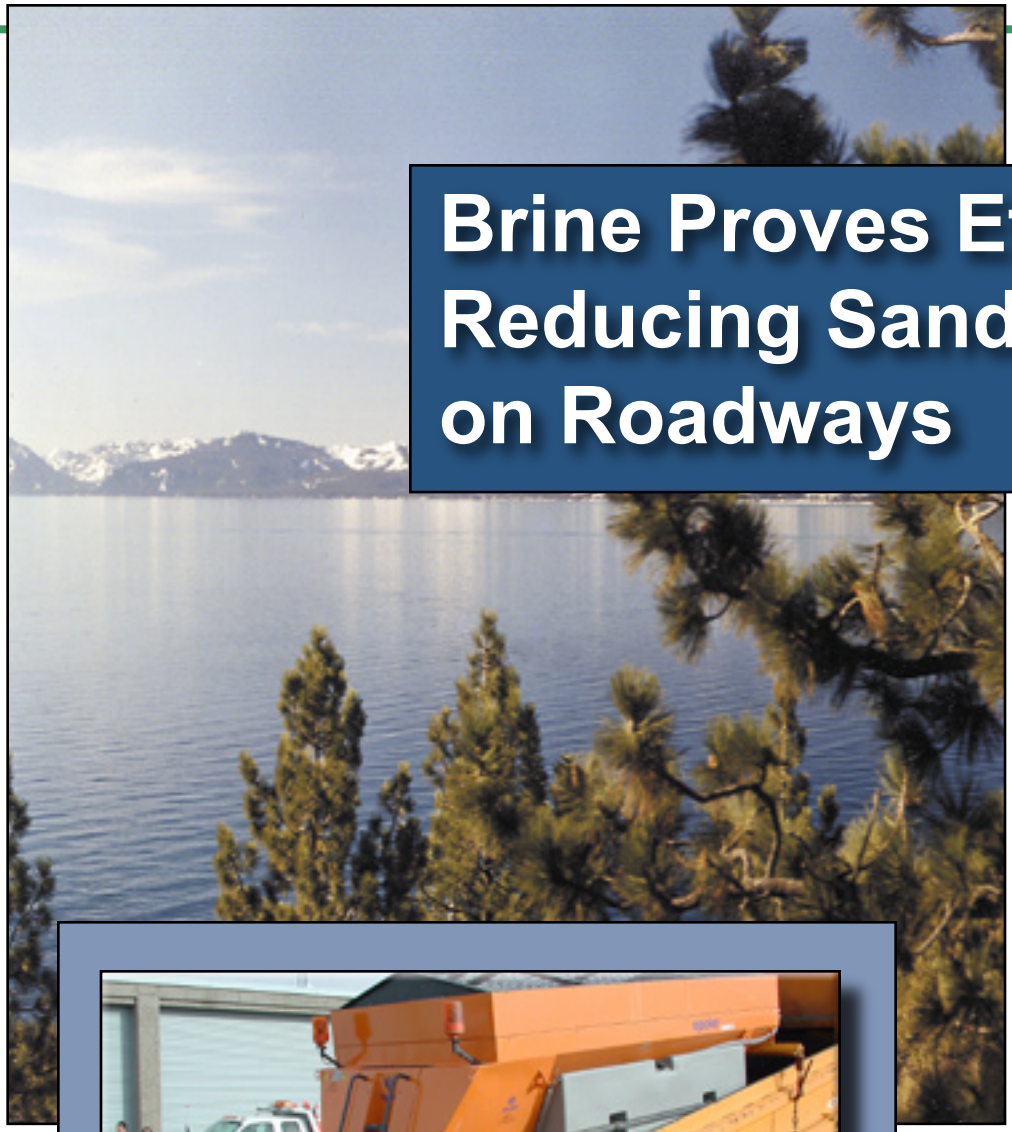
LIGHT FRIENDLY- The sound wall near Craig Road on US-95 is topped by a section of polycarbonate plastic that lets light through, but diminishes sound.

"The public may be surprised at the cost of sound walls, it's often $1 million or more per mile," traffic noise specialist Earl Case said. "It can be $2 million per mile for a retrofit project."

Retrofit Criteria

A retrofit sound wall (constructed after the roadway is in place) is much more expensive because it involves traffic control during the construction. While sound walls are routinely constructed where needed now, retrofitting sound walls may be desired along arterials constructed before the department instituted its Traffic Noise Mitigation Policy in 1973. This is especially true in fast-growing areas like Las Vegas where traffic volume predictions exceed all expectations.

NDOT has different criteria for retrofit projects. The most important requirement is matching funds: at least 50 percent of the project cost provided by local governments, developers or property owners.



Brine Proves Effective in Reducing Sand/Salt Mixture on Roadways

LATEST TECHNOLOGY—Larry Hough guides a new Epoke combination sand/salt spreader onto a snowplow truck bed. The spreader lays down granules or brine in precise, directed amounts. The operator can send material straight behind his machine, or to the side, covering one or two lanes. The accurate delivery system ensures that unnecessary material is not put out on the road, minimizing pollution and waste.

Spraying a salty solution on the roadway in anticipation of a snowstorm may seem like a strange idea, but the application of brine has a number of benefits. It permits NDOT maintenance crews to get a "head start" on a storm by lowering the freezing temperature of the roadway.

"The road stays wetter, longer with the use of brine," said former NDOT Assistant District II Engineer for maintenance Thor Dyson. "If we didn't use brine before a snowstorm, the road would ice up quickly."

The use of brine instead of the traditional sand and salt ratio of 5 to 1 has a number of benefits. Sand and salt puts much more salt into the environment than brine, and salt is detrimental to vegetation. The sand can wind up fouling waterways and contributing to dust pollution when it dries. It also has to be swept up after use.

If continuing snow and low temperatures cause a buildup of snow and ice on the roadway, the sand and salt mixture still must be used, but even then a pre-storm application of brine is of help.

"The brine forms a microscopic layer between the snow and asphalt," Dyson said. "It prevents the snow and ice from freezing onto the road. At the tail end of the storm it doesn't take as much effort to remove the snow and ice pack. You just drop the plow blades and peel off the snow pack."

Dyson, whose former area included western Nevada and the Lake Tahoe area, said NDOT has been able to reduce by half its use of sand and salt by using brine since the mid-1990s. NDOT began testing brine as an additional tool for snow and ice operations in the early 1990s.

Creative Problem-Solving Marks Agency Approach in Las Vegas

When it comes to preserving air and water quality in Clark County, NDOT is participating in a number of ways.

Silt and vegetation were clogging a large concrete ditch owned by NDOT along US 95 near the Spaghetti Bowl in Las Vegas. NDOT carefully cleaned its heavy equipment so no grease or hydraulic fluid would drip into the waterway while the material was removed.

The challenge is ongoing to keep silt and sediment from flowing downstream to underground drainage systems. Staff researched hay bales and screening materials to trap silt, but they seemed unsuitable. The solution NDOT came up with: burlap bags filled with coarse rock. When the bags fill up with silt, NDOT maintenance crews remove and replace them.

NDOT District I Maintenance Manager Lee McCurdy stands beside a dump truck that drops its load from the side instead of the rear. The department's newest vehicles have automatic devices to pull a cover down snugly over the load. McCurdy's maintenance crews have come up with innovative solutions to pollution problems in the Las Vegas area.

Air Quality

In Henderson, the department solved an air pollution problem the easy way recently by merely posting signs. Motorists were driving off the end of a paved frontage road to a private parking lot, cutting across a dirt area and kicking up dust. Several signs were posted saying trespassing was prohibited, and motorists stopped using the shortcut.

At Centennial Parkway and US 95, NDOT has a commuter parking lot that had dirt on the pavement and an unpaved section motorists were cutting across. The situation prompted a notice by Clark County, but cleaning the pavement and patching a dirt area corrected the situation.

NDOT complies with local air quality regulations by covering loads of sand or other materials. The department's newest vehicles, dump trucks that drop their load from the side instead of the rear, have automatic devices that pull a cover down snugly over the load.

Other improvements to equipment include recent purchases of street sweepers that meet the standards of the California Air Resources Board.

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NDOT is also represented on the Clark County Air Quality Management group on particulate matter. The initial focus of the group is the stabilization of unpaved shoulders using gravel. The group has found that liquid agents to treat dust are expensive and don't last. The group is making progress in finding a type of gravel that has a small enough amount of dust and dirt to be effective.

Maintaining dust control in a desert environment while performing road maintenance and construction can be a challenge. But NDOT has it easier than local governments because most of the state-owned roadways have paved shoulders, and often curbs and gutters.

When working on roadways, NDOT crews "want to prevent the immediate dust of vehicles churning up the soil," Maintenance Manager Lee McCurdy said. "It's also important to maintain the crust over native soils, so we don't get windborne dust." McCurdy is NDOT's representative on the Clark County working group.

Aesthetics Helping Plants and Animals

The year 2002 was a milestone for Nevada and its approach to transportation. As part of its effort to be more environmentally friendly, NDOT is now committed to making its highway projects more visually appealing. Landscape and aesthetics master planning can enhance environmental health by accommodating wildlife, reducing erosion and runoff, and protecting native plant communities.

At its June meeting, the State Transportation Board voted to make aesthetic considerations part of future highway projects and approved the direction the agency should take. Board members voted to spend three percent of the construction and capacity project budgets on landscape and aesthetic treatments. The department is making $2 million per year available for two years to accelerate corridor landscape planning and complete as many corridor plans as possible. In 2004, NDOT will contribute $500,000 per year to complete the remaining corridor plans. It is expected all corridor plans will be completed by September 2007.

Part of the money NDOT is committing to aesthetics will go into a community matching grant program for retrofitting existing highways with landscape and aesthetic treatments.

Before proceeding to the project design phase, NDOT will verify local government endorsement and funding commitment to the enhancements specified in the corridor plan. By the end of the project design, funding and maintenance agreements will be in place.

The aesthetics master plan can be accessed on the NDOT web site, under "Public Involvement."

Nevada's highways will compliment the state's scenic beauty. The Transportation Board has made a strong commitment to landscape and aesthetics as integral elements of the state's highways. Shown is SR 159, Red Rock Canyon National Conservation Area.

Fish Ladder Helps Trophy-Sized Trout

A fish ladder created by NDOT in 1998 on SR 388 near Wellington has been helping out rainbow, German brown and brook trout as they make their way up Sweetwater Creek from the East Walker River. The Walker River is known for its trophy-sized fish.

The culvert that takes the creek under the road had developed a drop-off of about five feet at the outflow that caused erosion problems for the highway and prevented fish passage. As part of highway and erosion control improvements to the area, NDOT's job was to design a structure that would solve both problems.

NDOT hydraulics staff designed a structure with eight pools snaking their way up the road's embankment at one-foot intervals. Hydraulics and NDOT's Environmental Services Division worked together to create the fish passage, which extends approximately 36 feet downstream.

The fish ladder has restored access to spawning habitat in areas previously unreachable by the fish and biologists report the new area is now being used for both the spring and fall spawning seasons.

The Nevada Division of Wildlife, local landowners, and the US Forest Service supported NDOT's efforts. The USFS will maintain the structure.

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