UNITED STATES OF AMERICA
DEPARTMENT OF INTERIEOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT OFFICE

CATEGORICAL EXCLUSION/DECISION RECORD
Greg M. Liles O&C Logging Road Right-of-Way Permit No. M-2230, OR 064337

CE# OR117-08-06

A. Proposed Action
The proposed action is to issue Greg M. Liles an O&C Logging Road Right-of-Way Permit under the provisions of 43 CFR 2812. Under the permit, Mr. Liles will be required to maintain the road to standards sufficient to avoid further degradation of the existing road, including installation of culvert(s) where water flows over the 39-7-29 road.

B. Location and Land Use Allocation
The affected roads are located in Josephine County on BLM lands administered by the Grants Pass Resource area and crosses Late Successional Reserve and General Forest Management Area. The specific roads to be used are shown on the attached map labeled as Exhibit A M-2230.

C. Need/Rational for the Proposed Action
Greg M. Liles has applied for an O&C Road Use Permit under 43 CFR 2812.0-6(h). This is consistent with the Resource Management Plan (RMP) which states that BLM administered lands would continue to be available for needed rights-of-way where consistent with local comprehensive plans, and Oregon statewide planning goals and rules (RMP p. 82).

D. Description of Proposed Action
The proposed action is the issuance of an O&C Logging Road Right-of-Way Permit No. M-2230, (OR 064337), under the provisions of 43 CFR Subpart 2812, and P.L. 94-579; 90 Stat 2743. The applicant requests use of approximately 7.10 miles of existing BLM roads (identified on the attached map) to haul 500 MBF of timber. Hauling would occur over a three year period with the potential for two one-year extensions. The permit would be for the haul of timber only.

The roads on U.S. lands are located in T. 39 S., R. 5 W., Sec. 29, W½, T. 39 S., R. 5 W., Sec. 30, E½ SE¼, NE¼NE¼, T. 39 S., R. 5 W., Sec. 20, SW¼SW¼, NW¼NW¼, T. 39 S., R. 5 W., Sec. 19, E½, T. 39 S., R. 5 W., Sec. 17, SW¼SW¼, T. 39 S., R. 5 W., Sec. 18, SE¼, S½ NW¼, SE¼NW¼,

Utilization of these roads would, by itself, not facilitate any additional ground-disturbing actions on federal lands. The ROW permit would not be a determining factor as to whether ground-disturbing actions would occur on private lands.

The following table identifies the U.S. roads to be used:

BLM Road	Segment	Surface Type
39-5-07	A,B,C1,	ABC
39-5-07	C2,D	PRR
39-7-29	Entire road	Natural

The roads shall be maintained by the applicant and will include installation of culverts as necessary to avoid impacts to streams, and maintenance of a wash station to minimize the chance of spreading Port-Orford cedar root disease (*Phytophthera lateralis*) upstream of infected areas.

Road work shall include installation of 18' diameter, 32' length, 18 gauge corrugated metal pipe (CMP) at mile post (MP) .25 on road 39-7-29 near the boundary of sections 29 and 32. CMP shall be installed in accordance with BLM Timber Sale Road Specification – Pipe Culverts – 400 (see attached). Road work shall also include installation of 18' diameter, 18 gauge CMP at all other live stream crossings of a length appropriate to avoid sedimentation into the stream.

Project Design Features

Project Design Features (PDFs) help reduce anticipated adverse environmental impacts. The following PDFs would be incorporated at each site.

Soil and Water

To provide future shade, erosion control, and bank stability, all disturbed stream channels would be planted with suitable native vegetation (conifers, deciduous trees, shrubs and grasses).

Port-Orford Cedar Root Disease

Port-Orford-cedar (POC), found along BLM lands within the right-of-way, will be managed according the 2004 BLM POC FSEIS/ROD (USDI 2004). The FEIS for Management of Port-Orford-Cedar in Southwest Oregon provides a risk key for management within the natural range of POC. The risk key done for this ROW application identified multiple areas of infected POC along the all segments of the proposed haul route(s). In order to mitigate against the spread of POC root disease (*Phytophthora lateralis),* the following project design features will be required:

- Whenever possible, limit hauling to the dry season. The dry season generally runs from May 15 to October 15, but occasional dry periods outside this time frame qualify as dry season conditions (USDI 2004 p. 35). Summer rain events where puddles form in the roadway, water found in ditches and high soil moisture also qualify for wet season conditions (USDI 2004 p. 37). Prior to hauling in the wet season, provide notification to BLM at least 14 days prior to hauling.
- Since all segments of the BLM sections of the haul route(s) run through infected POC areas, washing of project equipment would be most effective when leaving gravel and/or natural surface roads. The applicant would need to identify an appropriate washing site within ½ mile of starting haul on hard surface roads (i.e. paved or chip seal). Prior to using a wash site, applicant shall get written permission from land owner allowing the use of their property for the wash site. This includes potential wash sites on BLM land. Washing would require a

catch basin and / or natural barriers that are effective in limiting the run-off of the bleach water required for effective equipment washing done near live POC trees. If applicant isn't able to acquire and design the proper wash site the following would be required:

- Prior to leaving main landing area all equipment will be washed according to Management Guidelines provided by the Port-Orford Range-wide Assessment (USDA, USDI Goheen, Betlejewski and Angwin 2003) (See attachment 1).
- Since the equipment would be traveling across natural and/or gravel roads during the wet season, the equipment would need a second wash prior to moving to another operation. This wash could be done at the storage yard and / or mill site that each piece of equipment ends up at.

Noxious Weeds

Vehicles would be pressure washed prior to entering BLM lands. Any soil brought in for road or culvert construction will be weed free.

Special Status and T& E Species

Areas of soil disturbance outside of the road prism will be surveyed prior to any disturbance.

Fisheries

A fisheries biologist would participate in the design of the instream work.

Instream work would occur when the impacts to the stream can be minimized due to low flows or dry conditions.

Access into riparian areas would be restricted to the existing road prism where possible. Access other than this would be minimized and subject to review by the fisheries biologist.

Heavy equipment would be clean and free of leaks before use adjacent to or within stream channels.

Spill containment materials would be kept on site at all times.

Equipment refueling would not occur within 150' of streams.

Heavy equipment would stay outside of the channel to the greatest extent possible.

An erosion control plan would be in place prior to construction. Elements of the plan could include 1) the use of straw bales or silt fencing (filter cloth) to reduce the movement of soil and fines, 2) flow bypass around the work site, 3) work site dewatering by pumping water through overland vegetation or use of appropriate filters/filter fabric, 4) where sediment ponds are used, sediment and turbid water would be pumped from the settling pond to a vegetated site outside of the channel.

Disposal of waste material would be in approved, stable, non-floodplain sites.

Vegetation disturbance in ditches and at stream crossings would be minimized.

Public Notification and Fire Suppression
Oregon Department of Forestry, Josephine County officials, and local landowners would be notified prior to road closures. All roads would be signed and notices placed in newspapers at least two weeks prior to closure.

E. Plan Conformance Review

This proposal is consistent with policy directed by the following:

- the *Final Supplemental Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (Northwest Forest Plan FSEIS, 1994 and ROD, 1994);
- the *Final-Medford District Proposed Resource Management Plan/Environmental Impact Statement* and *Record of Decision* (EIS, 1994 and RMP/ROD, 1995);
- the *Final Supplemental Environmental Impact Statement: Management of Port-Orford-Cedar in Southwest Oregon* (FSEIS, 2004 and ROD, 2004);
- the *Final Supplemental Environmental Impact Statement and Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and* Guidelines (FSEIS, 2000 and ROD, 2001) including any amendments or modifications in effect as of March 21, 2004;
- *Medford District Integrated Weed Management Plan Environmental Assessment (1998*) and tiered to the *Northwest Area Noxious Weed Control Program* (EIS, 1985)

The proposed action is in conformance with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act), Federal Land Policy and Management Act of 1976 (FLPMA), the Endangered Species Act (ESA) of 1973, the Clean Water Act of 1987, Safe Drinking Water Act of 1974 (as amended 1986 and 1996), Clean Air Act, and the Archaeological Resources Protection Act of 1979.

This proposal is consistent with management direction in the Medford District Resource Management Plan that directs the BLM to continue to make BLM-administered lands available for needed rights-of-way where consistent with local comprehensive plans, Oregon state-wide planning goals and rules, and the exclusion and avoidance areas identified in the Resource Management Plan (USDI 1995, p. 82).

Categorical Exclusion Determination

This proposed action qualifies as a categorical exclusion as provided in United States Department of the Interior Departmental Manual 516 DM 11, 11.9.E.(16). This section allows for: *Acquisition of easements for an existing road or issuance of leases, permits, or rights-of-way for the use of existing facilities, improvements, or sites for the same or similar purposes.*

Before any action described in the list of categorical exclusions may be used, the "extraordinary circumstances," included in 516 DM 2, Appendix 2, must be reviewed for applicability (See attached review). After review, the BLM determined no extraordinary circumstances exist that would cause the proposed action to have a significant environmental effect. The action will not require additional analysis.

Contact Person
For additional information concerning this project, contact, Carl Symons at (541) 618-2216

Prepared by — Date: 11/29/07

NEPA Review — Date: 11/29/07

Decision
It is my decision to authorize O&C Logging Road Right-of-Way Permit No. M-2230 (OR 064337) as described in the Proposed Action. The project is planned for implementation in 2008.

Decision Rationale
The proposed action has been reviewed by Grants Pass Resource Area staff and appropriate Project Design Features, as specified above, will be incorporated into the proposal. Based on the attached NEPA (National Environmental Policy Act) Categorical Exclusion Review, I have determined the proposed action involves no significant impact to the environment and no further environmental analysis is required.

11-29-07

Abbie Jossie, Field Manager,
Grants Pass Resource Area

ADMINISTRATIVE REMEDIES
Administrative review of right-of-way decisions requiring National Environmental Policy Act (NEPA) assessment will be available under 43 CFR Part 4 to those who have a "legally cognizable interest" to which there is a substantial likelihood that the action authorized would cause injury, and who have established themselves as a "party to the case." (See 43 CFR § 4.410). The date the Categorical Exclusion Decision is approved by the Authorized Officer, will establish the date initiating a 30 day appeal period.

EFFECTIVE DATE OF DECISION
This is a lands decision on a right-of-way action in accordance with BLM regulations under 43 CFR Part 2812. All BLM decisions under 43 CFR 2812 will become effective on the day after

the expiration of the appeal period (30 days after this decision is signed) where no petition for a stay is filed, or 45 days after the expiration of the appeal period where a timely petition for a stay is filed, unless the Director of the Office of Hearings and Appeals or an Appeals Board has determined otherwise in accordance with specified standards enumerated in 43 CFR 4.21 (b).

RIGHT OF APPEAL

This decision may be appealed to the U.S. Department of the Interior, Office of Hearings and Appeals, Interior Board of Land Appeals (Board) by those who have a "legally cognizable interest" to which there is a substantial likelihood that the action authorized in this decision would cause injury, and who have established themselves as a "party to the case." (See 43 CFR § 4.410). If an appeal is taken, a written notice of appeal must be filed with the BLM officer who made the decision in this office by close of business (4:30 p.m.) not more than 30 days after this decision is approved. Only signed hard copies of a notice of appeal that are delivered to the (Grants Pass Interagency Office) will be accepted. Faxed or emailed appeals will not be considered.

In addition to the applicant/proponent for the right-of-way action, anyone who has participated in the National Environmental Policy Act process for this project will qualify as party to the case. (See 43 CFR § 4.410(b)). However, in order to qualify as an appellant, a "party to the case," you also have the burden of showing possession of a "legally cognizable interest" that has a substantial likelihood of injury from the decision. (See 43 CFR § 4.410(d).

The person signing the notice of appeal has the responsibility of proving eligibility to represent the appellant before the Board under its regulations at 43 CFR § 1.3. The appellant also has the burden of showing that the decision appealed from is in error. The appeal must clearly and concisely state which portion or element of the decision is being appealed and the reasons why the decision is believed to be in error. If your notice of appeal does not include a statement of reasons, such statement must be filed with this office and with the Board within 30 days after the notice of appeal was filed.

According to 43 CFR Part 4, you have the right to petition the Board to stay the implementation of the decision. Should you choose to file one, your stay request should accompany your notice of appeal. You must show standing and present reasons for requesting a stay of the decision. A petition for stay of a decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied,
2. The likelihood of the appellant's success on the merits,
3. The likelihood of immediate and irreparable harm if the stay is not granted, and
4. Whether the public interest favors granting the stay.

A notice of appeal with petition for stay must be served upon the Board, the Regional Solicitor and the Right of Way applicant, and any other adverse party identified by name in the decision (e.g. other right of way users)] at the same time such documents are served on the deciding official at this office. Service must be accomplished within fifteen (15) days after filing in order to be in compliance with appeal regulations. 43 CFR § 4.413(a). At the end of your notice of appeal you must sign a certification that service has been or will be made in accordance with the

applicable rules (i.e., 43 CFR §§ 4.410(c) and 4.413) and specify the date and manner of such service.

The IBLA will review any petition for a stay and may grant or deny the stay. If the IBLA takes no action on the stay request within 45 days of the expiration of the time for filing a notice of appeal, you may deem the request for stay as denied, and the BLM decision will remain in full force and effect until IBLA makes a final ruling on the case.

See the attached Form 1842-1 for complete instructions on Filing an Appeal.

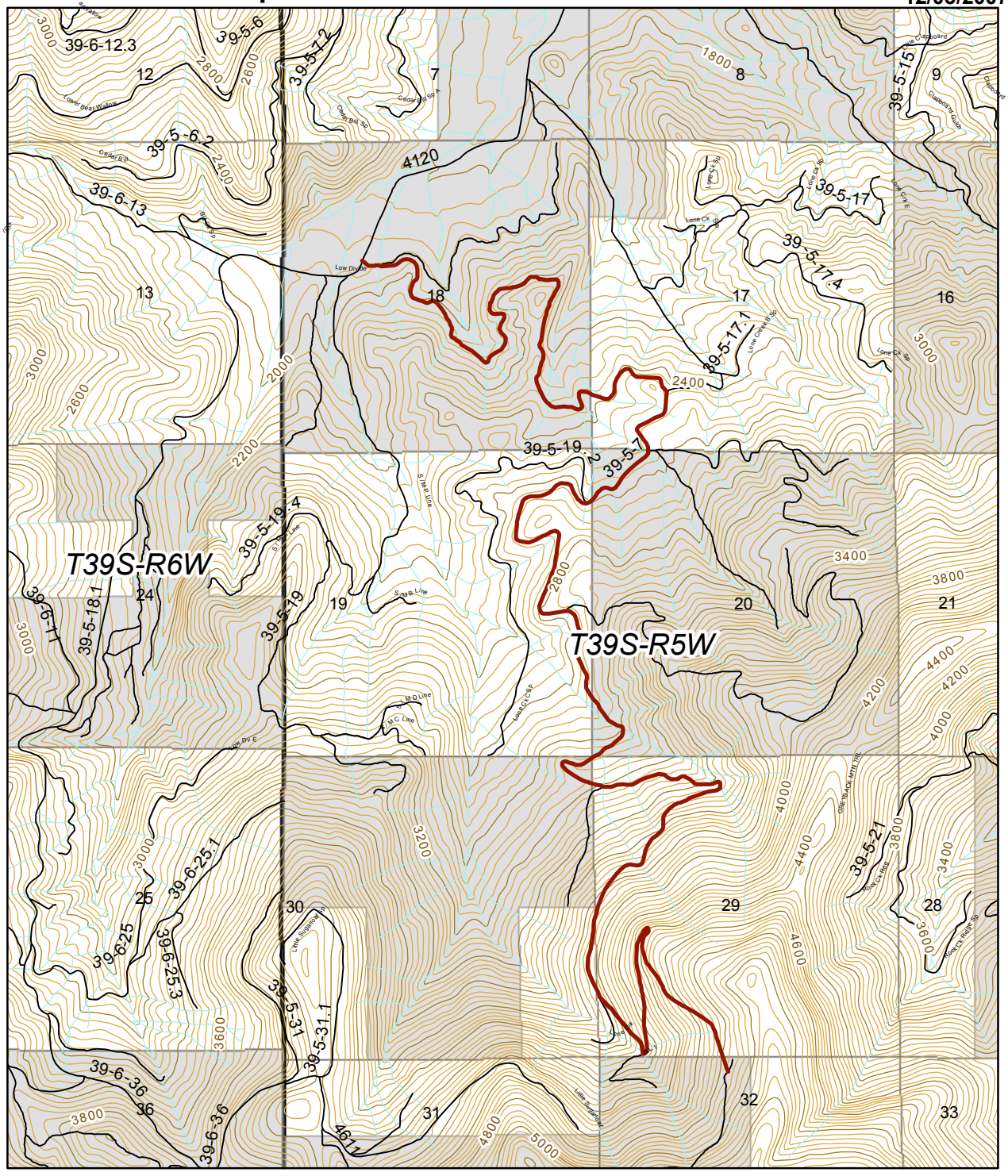
CONTACT INFORMATION

For additional information contact NAME, Abbie Jossie, Field Manager, Grants Pass Resource Area, 2164 NE Spalding Ave., Grants Pass, OR 97526, PHONE, 541-471-6500, or Carl Symons at 542-618-2216. Additional contact addresses include:

- U.S. Department of the Interior, Office of Hearings and Appeals, Interior Board of Land Appeals
  801 N. Quincy Street, MS 300-QC, Arlington, Virginia 22203
- Regional Solicitor
  Pacific Northwest Region, U.S. Department of the Interior
  500 N.E. Multnomah Street, Suite 607, Portland, Oregon 97232
- **Right-of-Way Applicant:**
  Greg M. Liles
  2109 E. Vilas
  Central Point, OR 97502

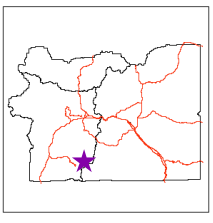
Greg Liles
ROW Location Map

M-2230
Ex. A
12/03/2007



Legend

- Approved ROW
- Road
- Stream
- BLM
- Non BLM



Universal Transverse Mercator Zone 10 N
North American Datum of 1983

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NEPA COMPLIANCE
CATEGORICAL EXCLUSION REVIEW
Greg Liles Right-of-Way Permit No. M-2230
CE# OR117-08-06

Department of the Interior Manual 516 DM 2, Appendix 2 provides for a review of the following criteria for categorical exclusion to determine if exceptions apply to the proposed action based on actions which may:

1. *Have significant impacts on public health or safety.*

   Yes No

   Remarks:

2. *Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resource;, park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas.*

   Yes No

   Remarks:

3. *Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)].*

   Yes No

Remarks:

4. *Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.*

   Yes No

Remarks:

5. *Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.*

   Yes No

Remarks:

6. *Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.*

   Yes No

Remarks:

7. *Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office.*

   Yes No

Remarks:

8. *Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species.*

   Plants Yes No Remarks:

   Animals Yes No Remarks:

   Fish Yes No Remarks:

9. *Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.*

   Yes No

   Remarks:

10. *Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).*

    Yes No

    Remarks:

11. *Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).*

    Yes No

    Remarks:

12. *Contribute to the introduction, continued existence, or spread of noxious weeds or nonnative invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).*

    Yes No

    Remarks:

Reviewers:

Coneen Francis — 11/29/07
Silviculture, Vegetation Dynamics & Port-Orford Cedar — Date

Robin Smith — 11/27/2007
Botany — Date

Lisa Brown — 11/28/07
Cultural Resources — Date

Jon Rabe — 11/27/07
Fisheries — Date

Wildlife — 11/28/07
Wildlife — Date

Michael DeBlasi — 11/28/07
Soils/Hydrology — Date

J. M. Klein — 11/28/07
Visual Resources / Recreation — Date

James R. Roper — 11/29/07
Engineering — Date

11/29/07
Fire and Fuels — Date

Attachment 1

General Specifications for a Washing Station and Equipment Cleaning Checklist

The following specifications are from the 1994 BLM "Port-Orford-cedar Management Guidelines," (FSEIS, Appendix 1). The Equipment Cleaning Checklist is from the POC FSEIS (FSEIS, Appendix 13), pp. 45-46.

General Specifications for a Field Washing Station

Purpose: The purpose of the washing station is to remove as much soil and organic matter from vehicles as possible to prevent/reduce the spread of PL. The intent is to reduce the spread of PL into uninfested areas. Washing can be accomplished with a mixture of chlorine bleach and water or by steam cleaning. The ration of chlorine bleach to water is 12 ounces of bleach per 1,000 gallons of wash water.

When locating and constructing a washing station to clean vehicles and equipment, we need to minimize the chance that a "clean" truck will be re-exposed to infested material near the washing site. There are two ways this can happen. One is if the truck travels through an area where "unclean" trucks are also traveling. This can be minimized by proper location of the washing station. If some common travel ways are used, efforts need to be made that will reduce the chance of picking up soil. This can be accomplished by rocking the common road surface or hardening it in some other fashion. Reducing the amount of water used for dust abatement will lessen the amount of mud which may also prove useful.

The second way a "clean" truck could become a carrier again is by traveling through wash water and mud at the washing station. Proper construction of the site will eliminate this risk. Runoff of the wash water needs to drain away from the wash site and away from the travel route to and from the site. Wash water must not be allowed to drain into stream channels. The actual washing site needs to be elevated so that the trucks are not sitting in mud and wash water. This could be accomplished by ramps or by building a sufficiently high rocked surface on which the trucks can travel. The length of the rocked surface wash area should be at least 1.5 times the length of the trucks that will be using it. This will allow the trucks to travel on a non-contaminated surface for a short distance after being washed and reduce the chances of picking up infested soil from the washing. The gravel used for rocking should be of sufficient size to allow good percolation of water and soil into the subsurface. Accumulations of water and soil on the surface should be avoided. This last point also affects the depth of the rocked road surface. The amount of washing and the number of trucks using the site will also influence the depth.

The type of equipment used for washing needs to be sufficient to remove all soil and organic matter that is clinging to the trucks. The actual water pressure required can best be determined on the site.

Equipment Cleaning Checklist

This checklist (for optional use) is referenced in the Washing Project Equipment management practice.

The purpose of this checklist is to provide guidance in the cleaning of equipment, as stipulated in contracts, to control or prevent the spread of noxious weeds and PL. The checklist directs attention to specific areas on equipment that are likely to accumulate soil and organic material. Questions to ask about overall equipment cleanliness are:

1) Does the equipment appear to have been cleaned?
2) Is the equipment clean of clumps of soil and organic matter?

Rubber-Tired Vehicles

- Tires
- Wheel rims (underside and outside)
- Axles
- Fenders/wheel wells/trim
- Bumpers

Track-Laying Vehicles

- Tracks
- Road wheels
- Drive gears
- Sprockets
- Roller frame
- Track rollers/idlers

All Vehicles

- Frame
- Belly pan (inside)
- Stabilizers (jack pads)
- Grapple and arms
- Dozer blade or bucket and arms
- Ripper
- Brush rake
- Winch
- Shear head
- Log loader
- Water tenders (empty or with treated water)
- Trailers (low-boys)
- Radiator/grill
- Air filter/pre-cleaner
- Struts/springs/shocks
- Body seams

400 PIPE CULVERTS - 400

401 - This work shall consist of furnishing and installing pipe culverts, half rounds, downspouts, elbows and other erosion control devices in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans. Individual lengths and locations are approximate; final lengths and locations will be determined by the Authorized Officer from established construction stakes, and. Additional pipe and erosion control devices may be required at the option of the Authorized Officer, in which case a reduction in the total purchase price shall be made to offset the cost of furnishing and installing such items. Costs will be based upon the unit prices set forth in the current BLM Timber Appraisal Production Cost Schedule.

402 - The pipe culverts will be located at the road locations as shown on the Exhibit C drawings.

403 - Grade culverts shall have a gradient of from 2 percent to 4 percent greater than the adjacent road grade and shall be skewed down grade 30 degrees as measured from the perpendicular to the centerline unless otherwise specified on the plans.

404 - Damage to the spelter, or burn back in excess of 3/8 inch, shall be wire brushed and painted with two coats of zinc-rich paint on zinc-coated, steel pipe and aluminum-rich paint on aluminum or aluminum-coated pipe.

405 - Corrugated steel riveted and helical pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 36 and AASHTO M 218 or AASHTO M 274 as specified on the plans.

405a - Corrugated-steel-welded pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 36 and AASHTO M 218 or AASHTO M 274 as specified on the plans.

405b - Corrugated-aluminum-alloy pipe culverts and pipe-arch culverts shall conform to the requirements of AASHTO M 196.

405c - Corrugated-steel-structural plate pipe culverts and pipe-arch culverts shall conform to the requirements of AASHTO M 167, except that single plates may exceed 75 pounds in weight.

405d - Corrugated-aluminum-structural plate pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 219.

405f - Ring gaskets for rigid pipe shall meet the requirements of AASHTO M 198. Continuous flat gaskets for flexible metal pipe shall meet the requirements of ASTM D 1056, with grade RE 41 used for bands with projections or flat bands, and grade RE 43 used for corrugated bands. When used with metal pipe with annular reformed ends, the ring gasket shall be one-fourth greater in diameter than the depth of the corrugation. Gasket thickness for bands with projections or flat bands shall be inch

greater than the nominal depth of the corrugation and shall be 3/8 inch for corrugated bands. For pipe with flanged ends, a butyl-rubber-strip gasket shall be placed inside the channel band.

406 - Coupling bands shall conform to the requirements of AASHTO M 36 and AASHTO M 218 or AASHTO M 274 with the exception of band widths and the Hugger-type band which shall conform to the details, dimensions, and typical diagram shown on the plans.

406a - Hugger-type coupling bands shall only be used with annular corrugated pipe and pipe-arch culverts or helically corrugated pipe and pipe-arch culverts having annular reformed ends. Annular reformed ends shall consist of 2 annular corrugations.

406b - Coupling bands produced from flat galvanized steel sheets with impressed dimples will be permitted only for connecting annular corrugated steel pipe to helically corrugated steel pipe. Such coupling bands shall conform to the width requirements shown on the plans.

406c - Elbow sections used in conjunction with full-round pipe culvert downspouts shall be connected at both ends by Hugger-type bands, and O ring neoprene gaskets shall be inserted between the band and pipe as shown on the plans to insure a water-tight joint..

406f - Channel-type coupling bands may be used on helical pipe with reformed rolled ends and flanged specifically to receive these bands. Such coupling bands shall conform to the requirements shown on the plans.

407a - Flumes and half rounds conforming to the material and construction requirements shown on the plans shall be constructed for culverts at the locations as specified in the plans.

408 - Pipe culverts and pipe-arch culverts shall be placed on the bed starting at the downstream end with the inside circumferential laps pointing downstream and with the longitudinal laps at the side or quarter points. Coupling bands of the type required under these specifications shall be installed so as to provide the circumferential and longitudinal strength necessary to preserve the pipe alignment, prevent separation of the pipe sections, and minimize infiltration of fill material.

410 - Pipe shall be unloaded and handled with reasonable care. If the Authorized Officer determines any structure is damaged to the extent that it is unsuitable for use in the road construction, it shall be replaced at the Purchasers expense.

411 - Trenches necessary for the installation of pipe culverts shall conform to the lines, grades, dimensions, and typical diagram included in the plans and the Culvert Installation Detail Sheet.

412 - Where ledge rock, boulders, soft, or spongy soils are encountered, they shall be excavated a minimum of 24 inches below the invert grade for a width of at least one

pipe diameter or span on each side of the pipe and shall be backfilled with selected granular or fine readily compactible soil material.

413 - Pipe culverts and pipe-arch culverts shall be bedded on a selected granular or fine readily compactible soil material having a depth of not less than 10 percent of the diameter or height of the drainage structure concerned or a minimum depth of:

Pipe Corrugation Depth	Minimum Bedding Depth
1/2 inch	1 inch
1 inch	2 inches
2 inches	3 inches

Foundation material shall be of uniform density throughout the length of the structure and shall be shaped to fit the pipe.

414 - The invert grade of the bedding shall be cambered in accordance with the requirements and details shown on the plans and as directed by the Authorized Officer.

414a - The invert grade of the bedding shall be cambered at the middle ordinate a minimum of 1 percent of the total length of the drainage structure. Camber shall be developed on a parabolic curve.

421 - Trenches and bedding rock necessary for the installation of perforated pipe shall conform to the lines, grades, dimensions, and typical diagram shown on the plans.

423 - Construction of catch basins and ditch dams conforming to lines, grades, dimensions and typical diagrams shown on the plans, shall be required for culverts.

424 - Construction of splash pads conforming to lines, grades, dimensions, and typical diagram shall be required for grade culverts and culverts at the locations as shown in the plans.

427 - The Purchaser shall record culvert sizes, lengths, and location actually installed on a copy of the culvert list. This culvert list shall be furnished to the Authorized Officer.