

**GREAT WESTERN MINING COMPANY
PLAN OF OPERATIONS**

**BRIDGEPORT RANGER DISTRICT
MINERAL COUNTY, NEVADA**

**TARGET 4 EXPLORATION PROJECT
JANUARY 2015**

PLAN OF OPERATIONS FOR MINING ACTIVITIES ON NATIONAL FOREST SYSTEM LANDS

Submitted by: _____
Signature Title Date

Plan Received by: _____
Signature Title Date

I. GENERAL INFORMATION

- A. Name of Mine/Project: Target 4 Exploration Project (Project).
- B. Type of Operation: Exploration drilling project for precious metals.
- C. Is this a (new/continuing) operation? New operation.
- D. Proposed start-up date of operation: Spring 2015.
- E. Expected total duration of this operation: One year.
- F. If seasonal, expected date of annual reclamation/stabilization close out: All reclamation will be stabilized by October 31st of each year (or as required by weather conditions and snowfall).
- G. Expected date for completion of all required reclamation: All reclamation will be completed by October 31st immediately following Project completion (or as required by weather conditions and snowfall).

II. PRINCIPALS

- A. Name of Operator: Great Western Mining Company
Address of Operator: 6121 Lakeside Drive, Suite 260
Reno, Nevada 89511
Phone Number: (775) 825-4300
- B. Name of Authorized Field Representative: Mr. Emmett O'Connell, Director
Address of Authorized Field Representative: 6121 Lakeside Drive, Suite 260
Reno, Nevada 89511
Phone Number: (775) 825-4300
- C. Name of Claim Owner(s): Great Western Mining Company
Address of Claim Owner: c/o Richard Harris
6121 Lakeside Drive, Suite 260
Reno, Nevada 89511
Phone Number: (775) 825-4300

- D. Name, address, and phone number of any other lessees, assigns, agents, etc., and briefly describe their involvement with the operation, if applicable:

Not applicable.

III. PROPERTY OR AREA

Name of claim, if applicable, and the legal land description where the operation will be located.

Great Western Mining Company (GWC) is submitting this new Plan of Operations (Plan) in order to conduct exploration activities for one year after disturbance is initiated, after the approval of the Plan. The Project is located entirely on National Forest System Lands administered by the United States Forest Service (USFS), Humboldt-Toiyabe National Forest, Bridgeport Ranger District.

All figures are located in Appendix A. Figure 1 shows the Project location, access, and land status. Figure 2 shows the proposed overland access routes and constructed drill sites within the Project Area. Figure 3 shows the claims in the Project Area. See Appendix B for a list of claims. The Project is located in all or portions of Section 35 and 36, Township 4 North, Range 31 East (T4N, R31E), and Section 2, T3N, R31E, Mount Diablo Base and Meridian (MDB&M); in Mineral County, Nevada (Project Area).

IV. DESCRIPTION OF THE OPERATION

- A. Access.** *Show on a map (USGS quadrangle map or a National Forest map, for example) the claim boundaries, if applicable, and all access needs such as roads and trails, on and off the claim. Specify which Forest Service roads will be used, where maintenance or reconstruction is proposed, and where new construction is necessary. For new construction, include construction specifications such as widths, grades, etc., location and size of culverts, describe maintenance plans, and the type and size of vehicles and equipment that will use the access routes.*

The Project is located on the southern flank of the Excelsior Mountains in Huntoon Valley approximately 65 miles southwest of Hawthorne, Nevada. From Hawthorne, take United States Highway 95 south through the towns of Luning and Mina for approximately 42 miles to the turnoff for Nevada State Highway 360, then turn west onto Nevada State Highway 360 and travel for approximately five miles to Belleview. Continue to travel west and southwest on local roads through Marietta for approximately 18 miles to the Project Area (Figure 1). GWC will perform road maintenance, if required, commensurate with its use of the roads in the area. See Section IV.C. for Project details.

- B. Map, Sketch or Drawing.** *Show location and layout of the area of operation. Identify any streams, creeks or springs if known. Show the size and kind of all surface disturbances such as trenches, pits, settling ponds, stream channels and run-off diversions, waste dumps, drill sites, timber disposal or clearance, etc. Include sizes, capacities, acreage, amounts, locations, materials involved, etc*

Figure 1 (Appendix A) shows the general location and access for the Project. Figure 2 (Appendix A) shows the location of the proposed exploration activities. The reference maps are the Huntoon Valley and Little Huntoon Valley United States Geological Survey (USGS)

7.5-minute quadrangles. See Section IV.C. for Project details. There are no perennial streams, springs or ponds within the Project Area. Jack Springs Creek is approximately 2.3 miles southeast from the nearest proposed disturbance and Huntoon Creek is approximately 4.3 miles from the nearest proposed disturbance located to the southwest, respectively.

C. Project Description. *Describe all aspects of the operation including mining, milling, and exploration methods, materials, equipment, workforce, construction and operation schedule, power requirements, how clearing will be accomplished, topsoil stockpile, waste rock placement, tailings disposal, proposed number of drillholes and depth, depth of proposed suction dredging, and how gravels will be replaced, etc. Calculate production rates of ore. Include justification and calculations for settling pond capacities, and the size of runoff diversion channels.*

GWC's proposed activities include exploration drilling from 12 constructed drill sites that will be accessed using approximately 8,711 linear feet of overland travel routes, approximately 5,094 linear feet of constructed road segments, and existing access roads. Slopes range from zero to 40 percent in the Project Area. The locations of the overland travel routes, constructed road segments, and drill sites are shown on Figure 2; however, the locations could be adjusted based on the results of biological and cultural surveys in order to avoid any sensitive resources.

Overland Travel Routes, Constructed Road Segments, and Drill Sites

GWC plans to utilize two feet of overland travel on each side of approximately 10,053 linear feet of the existing access route to the area of proposed exploration activities which currently averages an eight-foot running width, for a total running width of ten feet (to accommodate the track widths on the track-mounted drill rig). The surface disturbance associated with the overland travel along the existing access route totals approximately 0.9 acre. GWC will utilize approximately 8,711 linear feet of overland travel with an approximate disturbance width of ten feet for an approximate surface disturbance of two acres. GWC will construct approximately 5,094 linear feet of temporary exploration roads with an approximate disturbance width of 14 feet, for an approximate surface disturbance of 1.6 acres.

The proposed drill sites will have working areas with the approximate dimensions of 30 feet wide by 90 feet long and will be constructed from overland travel routes, constructed road segments, and existing access. The 12 drill sites will have a total proposed surface disturbance of approximately 0.7 acre (Table 1). GWC will conduct exploration drilling with up to two track- or buggy-mounted, reverse circulation drill rigs. Drill holes will be vertical or angled. Up to two holes will be drilled from each site and will average 1,000 feet in depth. One sump measuring approximately 20 feet long by 15 feet wide including the spoil pile, and ten feet in depth, will be excavated by the use of a backhoe within the disturbance of each drill site to trap drill cuttings and manage drilling fluids. During exploration, drilling activities will be managed to control cuttings, prevent the discharge of drill cuttings into drainages or down slope below drill sites, and keep work sites clean and safe. Management will include placing weed-free straw bales along the downslope edge of the sump to filter sediment from any water discharging from the sump. The straw bales will also slow and dissipate the overflow water to prevent erosion. All drill holes (i.e., boreholes as defined by Nevada Administrative Code (NAC) 534.047) will be plugged as an operational procedure immediately after completion of drilling in accordance with NAC 534.4369

through 534.4371. Coordinates of the drill hole collars are listed in Table 1. Drill site locations may be relocated within the Project Area depending on drilling results and in coordination with the USFS.

The total disturbance will be approximately 5.2 acres, which will require permitting with the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR).

Table 1: Proposed Drill Site Locations

Drill Sites	UTM Location (NAD 83)	
	Northing	Easting
1	4224489	369336
2	4224239	369336
3	4224688	369934
4	4224320	369635
5	4224394	369932
6	4224145	369930
7	4224354	370126
8	4224424	370237
9	4224311	370529
10	4223967	369333
11	4223973	369821
12	4224037	369734

Where necessary, balanced cut and fill construction will be used to the extent practicable to minimize the exposed cut slopes and the volume of fill material. Since the depth of the cut will be kept to a minimum, growth media removed during construction will be stockpiled as the fill slope to be used during reclamation. All disturbances will be kept to a minimum as long as safety is maintained for the crews using the roads and drill sites.

GWC is planning on constructing roads and Best Management Practices (BMPs) established by the NDEP and the Nevada Division of Conservation Districts, 1994, *Handbook of Best Management Practices*, adopted by the State Environmental Commission December 7, 1994, and National BMPs for Water Quality Management on National Forest System Lands will be followed to minimize the surface disturbance and erosion potential. No culverts will be installed. Routine road maintenance may be required and will consist of smoothing ruts, removal of large rocks, filling holes with fill material, grading and re-establishing waterbars when necessary.

Table 2: Acreage of Proposed Project Disturbance

Exploration Activity	Proposed Surface Disturbance (acres)
Overland Travel	2.0
Overland Travel (Extension of Existing Access)	0.9
Constructed Road Segments	1.6
Constructed Drill Sites	0.7
Total	5.2

GWC will store equipment and material that will be utilized for proposed activities on constructed drill site surface disturbance. Equipment required for drilling will include up to two track-mounted drill rigs and miscellaneous service vehicles. Each drill crew will consist of one driller, two helpers, and one geologist. The drill will likely operate two shifts per day, seven days per week. The crews will stay in surrounding towns and commute daily to the site. During exploration activities, drilling procedures will be managed to control cuttings, prevent the discharge of drill fluids into drainages or down slopes below drill sites, and keep work sites clean and safe. The duration of drilling at each site could vary by location and range between two days to two weeks. In the event that no personnel are on site for extended periods of time, all drill holes, including partially completed holes, will be plugged. The Reclamation Cost Estimate (RCE) will be calculated by the USFS for the proposed exploration activities and included in Appendix C of the final version of the Plan.

D. Equipment and Vehicles. *Describe that which is proposed for use in your operation (Examples: drill, dozer, wash plant, mill, etc.). Include: sizes, capacity, frequency of use, etc.*

A Cat D6, or equivalent dozer, will be used to construct the drill sites where needed. A backhoe will be utilized for excavating sumps. Exploration and drilling personnel will access the site in four-wheel drive vehicles. Up to two track-mounted drill rigs will be used in the Project Area and the rigs will include the following support vehicles:

- Up to two 2,000- to 3,500-gallon all-terrain water vehicles;
- Up to two pipe trucks;
- Up to two booster trucks;
- One D6, or equivalent dozer;
- One backhoe;
- Up to two auxiliary air compressors; and
- Up to two portable light plants/generators.

GWC will take steps to prevent fires by ensuring that each field vehicle carries hand tools, water, and a fire extinguisher. Water trucks at the Project Area will be used in the event of a fire. All portable equipment, including the drill rig, support vehicles and drilling supplies, will be removed from the Project Area during extended periods of non-operation.

- E. Structures.** *Include information about fixed or portable structures or facilities planned for the operation. Show locations on the map. Include such things as living quarters, storage sheds, mill buildings, thickener tanks, fuel storage, powder magazines, pipelines, water diversions, trailers, sanitation facilities including sewage disposal, etc. Include engineering design and geotechnical information for project facilities, justification and calculations for sizing of tanks, pipelines and water diversions, etc.*

A portable chemical toilet will be used while the drill crew is on site. GWC will utilize a 15,000 gallon bladder for water storage during Project activities which will be located on constructed drill site disturbance.

V. ENVIRONMENTAL PROTECTION MEASURES (SEE 36 CFR 228.8)

A. Air Quality. Describe measures proposed to minimize impacts on air quality such as obtaining a burning permit for slash disposal or dust abatement on roads.

The dust from the use of roads will be minimized to the extent reasonable and practicable by using BMPs such as minimizing vehicular traffic and using prudent vehicle speeds to minimize all fugitive dust created by travel between drill sites and drilling activities. GWC will water the overland travel routes as a dust control measure if it is determined necessary by the USFS.

B. Water Quality. State how applicable state and federal water quality standards will be met. Describe measures or management practices to be used to minimize water quality impacts and meet applicable standards.

1. State whether water is to be used in the operation, and describe the quantity, source, methods and design of diversions, storage, use, disposal, and treatment facilities. Include assumptions for sizing water conveyance or storage facilities

Water will be used for drilling fluids. The estimated quantity of water required is approximately 5,000 gallons per day. Water will be obtained for GWC's proposed drilling activities from the town of Mina, Nevada.

Sumps as described in Section IV.C. will be constructed to trap drill cuttings and manage drilling fluids. During exploration, drilling activities will be managed to control cuttings, prevent the discharge of drill cuttings into drainages or down slope below drill sites, and keep work sites clean and safe. Sumps would be constructed with a sloped end for easy egress. Management will include placing weed-free straw bales along the downslope edge of the sump to filter sediment from any water discharging from the sump. The straw bales will also slow and dissipate the overflow water to prevent erosion.

2. Describe methods to control erosion and surface water runoff from all disturbed areas, including waste and tailings dumps.

BMPs for sediment control will be utilized during construction, operation, and reclamation to minimize sedimentation from disturbed areas. Proposed temporary construction and drilling activities will avoid springs and seeps. In order to facilitate drainage and prevent erosion, all bladed roads will have waterbars constructed, as needed.

Sediment control structures will include, but not be limited to, fabric or weed-free straw bale filter fences, siltation or filter berms, mud sumps, and downgradient drainage channels in order to prevent unnecessary or undue degradation to the environment. Sediment traps, constructed as necessary adjacent to the drill sites, will be used to settle drill cuttings and prevent their release. In order to control erosion from roads and drill sites, and from the unlikely event of drill cuttings being released, certified weed-free straw bales and silt fences will be placed in drainages to capture sediment, if required.

3. *Describe proposed surface water and groundwater quality monitoring, if required, to demonstrate compliance with federal or state water quality standards.*

Not applicable.

4. *Describe the measures to be used to minimize potential water quality impacts during seasonal closures, or for a temporary cessation of operations.*

No chemicals or equipment will remain on site during seasonal closures.

All drill holes (i.e., boreholes) will be plugged in accordance with NAC 534.4369 through 534.4371. Drill holes will be plugged prior to the drill rig moving from the drill site. In the event that no personnel are on site for extended periods of time, all drill holes, including partially completed holes, will be plugged.

5. *If land application is proposed for waste water disposal, the location and operation of the land application system must be described. Also describe how vegetation, soil, and surface and groundwater quality will be protected if land application is used.*

Not applicable.

C. Solid Wastes. *Describe the quantity and the physical and chemical characteristics of solid waste produced by the operation. Describe how the wastes will be disposed of including location and design of facilities, or treated so as to minimize adverse impacts.*

A minimal amount of general refuse, associated with work operations, will be generated in the Project Area. All refuse generated during the Project will be removed and disposed of in an authorized landfill facility off site, consistent with applicable regulations. No refuse will be disposed of, or left, on site. A portable chemical toilet will be used during the time the drill crew is on site.

D. Scenic Values. *Describe protection of scenic values such as screening, slash disposal, or timely reclamation.*

Impacts to the visual scenic quality of the area will be reduced by reclaiming all disturbed areas in a timely manner. The Project Area lies within managed lands acquired by the USFS through the Enhancement Act of 1989; thus, no Recreation Opportunity Spectrum (ROS) for recreation of Visual Quality Objectives (VQO) exist within the Project Area.

E. Fish and Wildlife. *Describe measures to maintain and protect fisheries and wildlife, and their habitat (includes threatened, endangered, and sensitive species) affected by the operations.*

Vegetation and wildlife surveys have been conducted in the Project Area by Enviroscientists, Inc. No active raptor nests will be removed as a result of any exploration activities unless approved by the USFS or other appropriate agency. To benefit wildlife species that inhabit standing dead trees, removal of snags will be avoided when possible. Sumps will be constructed with escape ramps which allow ungulates to get out, should they fall in.

F. Cultural Resources. *Describe measures for protecting known historic and archeological values, or new sites in the project area.*

A cultural survey has been scheduled to be conducted in the Project Area by an approved third-party contractor. Identified eligible or unevaluated cultural resource sites (historic or pre-historic) will be avoided by all Project activities. If previously undiscovered cultural resources are exposed as a result of operations under this Plan, GWC will cease operations, leave such discoveries intact and notify the District Ranger. GWC will not proceed until notified in writing by the District Ranger that compliance with the provisions for mitigating unforeseen impacts as required by 36 Code of Federal Regulations (CFR) 228.4(e) has been satisfied.

G. Hazardous Substances.

1. Identify the type and volume of all hazardous materials and toxic substances which will be used or generated in the operations including cyanide, solvents, petroleum products, mill, process and laboratory reagents.

Hazardous substances utilized at the Project will include diesel fuel, gasoline and lubricating grease. Approximately 500 gallons of diesel fuel and 100 gallons of gasoline will be stored in fuel delivery systems (i.e., manufacturer installed gas tanks) on drill rigs and support vehicles. Approximately 100 pounds of lubricating grease will be stored on the drill rig or transported by drill trucks. The Material Data Safety Sheets (MSDS) for these substances are provided in Appendix D.

2. For each material or substance, describe the methods, volume, and frequency of transport (include type of containers and vehicles), procedures for use of materials or substances, methods, volume, and containers for disposal of materials and substances, security (fencing), identification (signing/labeling), or other special operations requirements necessary to conduct the proposed operations.

Diesel fuel will be transported in a truck-bed-mounted external tank and in internal vehicle fuel tanks. Gasoline will be transported in hand-held containers and in internal vehicle fuel tanks. Lubricating grease will be transported in five-gallon tubs (or similar containers). All containers of hazardous substances will be labeled and handled in accordance with Nevada Department of Transportation and Mine Safety and Health Administration regulations.

3. Describe the measures to be taken for release of a reportable quantity of a hazardous material or the release of a toxic substance. This includes plans for spill prevention, containment, notification, and cleanup.

In the event that hazardous or regulated materials are spilled, measures will be taken to control the spill and the USFS, NDEP, and/or Emergency Response Hotline will be notified as required. Any hazardous substance spills will be cleaned immediately, and any resulting waste will be transferred off site in accordance with all applicable local, state, and federal regulations. Contract drillers will maintain spill kits on site for use in case of a spill. A Spill Prevention Plan, including MSDS, is included in Appendix D.

H. Reclamation. *Describe the annual and final reclamation standards based on the anticipated schedule for construction, operations, and project closure. Include such items as the removal of structures and facilities including bridges and culverts, a revegetation plan, permanent containment of mine tailings, waste, or sludges which pose a threat of a release into the environment, closing ponds and eliminating standing water, a final surface shaping plan, and post operations monitoring and maintenance plans.*

The intent of the Plan is to reclaim the Project Area to a beneficial land use, prevent unnecessary degradation of the environment, and reclaim disturbed areas to ensure visual and functional compatibility with surrounding areas. Reclamation will be completed to the standards described in 36 CFR 228.8(g). Constructed drill sites will be recontoured to blend with the surrounding area. The area will then be reseeded with a USFS-approved certified weed-free seed mix (Table 3) at the appropriate time of year and at an application rate for optimum seed sprouting and plant growth. The seeding will be completed using a broadcast method, and then raked. The reclaimed surfaces will be left in a textured or rough condition. Overland travel routes will be scarified if compaction occurs and then reseeded and raked by hand. Sumps will be backfilled with spoil material and the surface will be seeded in accordance with the methods described above. Seeded areas will be monitored for stability and revegetation success, during the spring or fall, once per year, for a minimum of three years, until attainment of the revegetation standards established in the *Nevada Guidelines for Successful Revegetation for the NDEP, BLM and USFS* (Instruction Memorandum #NV-13).

Table 3: Recommended Project Seed Mix

Species Common Name (<i>Species Scientific Name</i>)	Pounds/Acre (PLS)
Fourwing saltbush (<i>Atriplex canescens</i>)	2.0
Shadscale saltbush (<i>Atriplex confertifolia</i>)	4.0
Winterfat (<i>Krascheninnikovia lanata</i>)	4.0
Nevada jointfir (<i>Ephedra nevadensis</i>)	4.0
Scarlet globemallow (<i>Sphaeralcea coccinea</i>)	0.5
Lewis flax (<i>Linum lewisii</i>)	0.7
Crested wheatgrass (<i>Agropyron cristatum</i>)	1.0
Indian ricegrass (<i>Achnatherum hymenoides</i>)	2.0
Great Basin wildrye (<i>Leymus cinereus</i>)	1.0
Squirreltail (<i>Elymus elymoides</i>)	1.0
Total	20.3

In coordination with the USFS, ruts will be filled in, overly compacted routes will be ripped and seeded, and routes that could collect runoff will be water-barred and/or ripped. During the exploration program, reclamation activities will involve management of drilling procedures to contain cuttings, management of drilling fluids, and keeping worksites clean and safe. Concurrent reclamation of roads and drill sites will be completed to the extent practicable during operations. Final reclamation including recontouring, ripping, and reseeding will be completed within one year from the completion of the final drill hole. The

USFS will be notified before the commencement of final reclamation work. Table 4 below shows the anticipated exploration reclamation schedule.

All drill holes (i.e., boreholes) will be plugged in accordance with NAC 534.4369 through 534.4371. Drill holes will be plugged prior to the drill rig moving from the drill site. In the event that no personnel are on site for extended periods of time, all drill holes, including partially completed holes, will be plugged.

Table 4: Exploration Reclamation Schedule

TECHNIQUES	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Regrading												
Seeding												
Monitoring												

Bond Release Criteria

The operator must provide documentation of reclamation work completed before any portion of the bond may be released. Prior to release, a field inspection is required to verify that reclamation has been performed in accordance with the approved Plan of Operation.

Partial Release – Upon completion of the Project, portions of the bond can be released when: 1) earthwork (recontouring, reshaping, ripping, etc.) has been completed and the areas are stabilized and reseeded. The amount of bond covering these activities can be released, however, the bond portion covering revegetation will be held until vegetation release criteria is met.

Successful Revegetation– The revegetation release criteria for reclaimed sites will be to achieve as close to 100 percent of the perennial plant cover of selected comparison areas as possible. As approved by the agencies, the selected plant communities or reference areas must have a reasonable chance for success on the site. The USFS may also require specific release standards for individual plant species or vegetative types (grasses, forbs, shrubs, trees). The success of the vegetative growth on a reclaimed site may be evaluated for release no sooner than the third growing season after earthwork, planting and irrigation (if used) have been completed. Final bond release may be considered at that time. Interim progress of reclamation will be monitored as appropriate by the USFS and operator. Where it has been determined that revegetation success has not been met, the USFS and the operator will meet to decide on the best course of actions necessary to meet the reclamation goal. Extenuating circumstances may be considered when evaluating the success of the revegetation effort. If the Forest Service determines that further stabilization or revegetation efforts are needed, the operator and the USFS will meet to determine what further steps are necessary. Revegetation standards are established in Nevada Guidelines for Successful Revegetation for the NDEP, the BLM, and USDA Forest Service (Instruction Memorandum #NV-13).

Final Bond Release – Total release of the bond can only be approved when all surface structures, equipment, and supplies have been removed; all disturbed areas have been recontoured, reshaped, and adequate drainage has been completed; and revegetation has met the vegetation release criteria.

GWC will cooperate with the USFS to inventory and monitor noxious weeds/undesirable plants within areas of disturbance related to GWC activities within the Project Area. A listing of noxious weeds/undesirable plants can be found in the USFS Region 4 Noxious Weed List. Plants on the Region 4 Noxious Weed List will not be considered as part of the ground cover determination. GWC will biologically or chemically treat, on an annual basis, any noxious weed/undesirable plant infestations that result from ground-disturbing activities within the Project Area within a five-year period following the last ground-disturbing activity per Forest Service Manual 2080. Treatments will be applied, recorded, and provided to the USFS. As a standard operating procedure, GWC will treat noxious weed occurrences as soon as they are identified.

VI. FOREST SERVICE EVALUATION OF PLAN OF OPERATIONS

A. Required changes/modifications/special mitigation for plan of operations:

MAINTAINABILITY OF A SURETY BOND

If the bond is provided by an approved surety company, and if at a future time, prior to expiration of the Plan of Operations or relinquishment of the bond by the USFS, the surety company providing the bond is removed from the approved list, the operator will automatically be placed in non-compliance and will be required to replace the unapproved surety provider utilized to bond for this operation. Replacement bonding may be through an approved surety company or other accepted and approved bonding mechanisms.

BOND UPDATE CRITERIA

The bond amount required for this Plan of Operations is subject to yearly review and adjustment to compensate for items including, but not limited to, completed reclamation work, changes in equipment rental rates, wage rate scales, fuel rates and increased scope of operations (increases or decreases in the amount of disturbance, addition of equipment, improvements, and materials).

BOND RELEASE CRITERIA

The operator must provide documentation of reclamation work completed before any portion of the bond may be released. Prior to release, a field inspection is required to verify that reclamation has been performed in accordance with the approved reclamation plan and Plan of Operations.

Partial Release – Upon completion of the project, portions of the bond can be released when: 1) earthwork (recontouring, reshaping, ripping, etc.) has been completed and 2) all disturbed areas are stabilized and reseeded. The amount of the bond covering these activities can be released; however, the portion of the bond covering revegetation will be held until revegetation release criteria are met.

Successful Revegetation– The revegetation release criteria for reclaimed sites will be to achieve as close to 100 percent of the perennial plant cover of selected comparison areas as possible. As approved by the agencies, the selected plant communities or reference areas must have a reasonable chance for success on the disturbed areas. The USFS may also require specific release standards for individual plant species or vegetative types (grasses, forbs, shrubs, trees). The success of the vegetative growth on a reclaimed site may be evaluated for release no sooner than the third growing season after earthwork, planting and irrigation (if used) have been completed. Final bond release may be considered at that time. Interim progress of reclamation will be monitored as appropriate by the USFS and the operator. Where it has been determined that revegetation success has not been met, the USFS and the operator will meet to decide on the best course of actions necessary to meet the reclamation goal. Extenuating circumstances may be considered when evaluating the success of the revegetation effort. If the USFS determines that further stabilization or revegetation efforts are needed, the operator and the USFS will meet to determine what further steps are necessary. Revegetation standards are established in Nevada Guidelines for Successful Revegetation for the NDEP, the BLM and USDA Forest Service (Instruction Memorandum #NV-13).

Final Bond Release – Total release of the bond can only be approved when all surface structures, equipment, trash, and supplies have been removed; all disturbed areas have been recontoured and reshaped and adequate drainage has been completed; and revegetation has met the release criteria.

PROJECT START-UP, CHANGE OF OPERATIONS, CESSATION OF OPERATIONS, REMOVAL OF STRUCTURES AND EQUIPMENT

The operator shall provide two weeks (14 days) notice to the USFS before starting this project. Modifications to the Plan may require additional surveys, reports and evaluations before they can be implemented.

The operator shall notify the District Ranger within 15 days in writing after an operation is temporarily put on hold or completed. Notification will include the date on which activities for reclamation will begin. Long term (interim) shutdown reclamation measures will be agreed upon. Temporary closure caused by weather conditions does not require notification. In accordance with 36CFR228.10 regulations, the operator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations. Other than seasonally, where operations have ceased temporarily, an operator shall file a statement with the District Ranger which includes: (a) verification of intent to maintain the structures, equipment and other facilities, (b) the expected reopening date, and (c) an estimate of the extended duration of operations. A statement shall be filed every year in the event operations are not reactivated. The operator shall maintain the operating site, structures, equipment and other facilities in a neat and safe condition during non-operating periods.

DEPARTURE FROM THE APPROVED PLAN OF OPERATIONS

Except in the case of an emergency, the operator may not depart from the approved Plan of Operations without a modification approved by the USFS.

The operator shall maintain a copy of the Plan of Operations, supplements and modifications at the permitted operation at all times. It is the Operator's responsibility to convey information from the Plan of Operations (including environmental protection measures and mitigation) to their staff, contractors and others who will be implementing actions approved under this Plan.

Any noncompliance with this Plan of Operations must be reported orally to the USFS minerals administrator within 48 hours of the time the operator has knowledge of the circumstances. A written summary shall be provided within 10 days after the oral report is made.

Any changes in the operator's name or address or corporation/partnership/proprietorship name shall be reported within 10 days to the USFS minerals administrator in writing and must indicate the Plan of Operations number and appropriate changes.

Any changes in operator's representative for this project and/or contact information must be reported within 24 hours to the USFS minerals administrator for this project.

FIRE PREVENTION AND CONTROL

Per 36 CFR Section 228.11 the operator shall comply with all applicable Federal and State fire laws and regulations and shall take all reasonable measures to prevent and suppress fires on the area of operations and shall require his employees, contractors and subcontractors to do likewise. The operator is responsible for fire suppression activities within their capabilities and should not risk anyone's safety or exceed their training in wildland fire suppression. The operator shall insure that prevention and suppression actions are in accordance with this POO, and its employees shall comply with a fire plan, including potential evacuation routes, for the duration of the on-site activity.

The operator shall report any fire to 911 or call the nearest dispatch center and notify the nearest Ranger District of the fire location and any action taken.

All internal combustion power equipment used by the operator on the project shall be equipped with an approved spark arrester, that complies with all state and federal fire requirements, as set forth in the publication of the USDA Forest Service, entitled "Spark Arrester Guide". All arresters shall be in satisfactory working condition. The following are exempt from the requirements of this rule: (a) turbine-charged internal combustion engines in which 100% of the exhaust gasses pass through a turbo-charger, (b) engines of passenger vehicles and light trucks equipped with muffler with baffles, and (c) water pumping equipment used in fighting fire.

All vehicles including each drilling rig, backhoe/loader, water trucks, and pickup trucks shall have at least one (1) size "O" shovel (38-1/2" handle minimum) or larger, and one (1) 5 ABC or larger rated fire extinguisher. If on site, a water truck should be full and available in case of fire. A method for pumping or delivering water in case of fire, e.g. hoses, should be available.

Prior to moving on site, and as directed by the District during the period of operation, the contractor shall contact the nearest District Office to determine the level of fire danger. A minerals administrator will provide the operator with any additional fire precaution procedures as appropriate for the fire danger level.

NOXIOUS WEEDS

Noxious weed control measures shall be taken in accordance with the Humboldt-Toiyabe National Forest Supplement FSM Chapter 2080-Noxious Weed Management (9/10/04), Section 3 (Rehabilitation), Section 6 (Minerals Exploration and Mining), Section 7 (Road Maintenance), and Section 8 (Road Construction and Heavy Equipment Use). Key requirements include: 1) thoroughly wash all equipment prior to entering the National Forest to prevent the spread of noxious weeds; 2) treat noxious weeds along roads and access roads (requiring maintenance) prior to implementation to reduce the threat of inadvertent redistribution; 3) monitor the project area for noxious weeds; 4) treat any noxious weed infestation within the project area that results from project activities for at least a 3-year period following the last activity.

All equipment shall be washed prior to entering the project area to prevent the introduction of noxious weeds into the project area. The operator shall cooperate with the USFS to inventory, monitor and control noxious weeds within areas of disturbance until release of all bond monies.

CULTURAL RESOURCE PROTECTION

Avoidance of identified sites is the USFS-preferred method for preventing effects to historic properties (a historic property is any prehistoric or historic site eligible for the National Register of Historic Places, NRHP) or unevaluated cultural resources. A Class-III survey has been completed and if any mitigation measures are needed to avoid adverse impacts, they will be described in a Forest Service Addendum which will be inserted in this document prior to signing for Acceptance (Section VIII) and Approval (Section IX).

All drill pads and access roads are to be reclaimed at the end of the project so there should be no indirect adverse effects to significant cultural properties identified within the surveyed area. Project activities may not begin before State Historic Preservation Office (SHPO) concurrence has been received. Through avoidance, the project will have no adverse effect on historic properties.

Should cultural resources, human remains, items of cultural patrimony, sacred objects, funerary items or an undocumented site be discovered during project activities, all operations shall stop within a 300 foot radius of the discovery and the operator shall, within 24 hours, notify the District Ranger by phone at 775-964-2671. If the call is made outside of normal business hours, the operator shall leave a detailed message with contact information. The USFS will make proper notifications to the appropriate entities (SHPO, Tribes) and a qualified cultural resource specialist will evaluate the find. If the resource is determined to meet eligibility criteria, the USFS would propose actions to resolve adverse effects. Such procedures would be in accordance with current applicable laws, regulations, and agreements. No activity within a 300 foot radius of the discovery would resume until a notification is issued in writing by the District Ranger. Should the resource be determined not eligible, no further work may be required and project activity may resume once written notification has been received.

MIGRATORY BIRDS AND WILDLIFE PROTECTION

On January 11, 2001, President Clinton signed an Executive Order for the Conservation of Migratory Birds. This executive order outlines the responsibilities of Federal agencies to protect migratory birds and directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act. Under the provisions of the Migratory Bird Treaty Act, the unauthorized take (death or injury) of migratory birds is a strict liability criminal offense that does not require knowledge or specific intent on the part of the offender. The nesting season for migratory birds is generally May 1 through July 15th. Any take of a migratory bird must be avoided.

In order to avoid possible disturbance to migratory birds that may be nesting in the project area, no work shall be done between May 1 and July 15, inclusive. If work must be performed during this time frame, the operator shall ensure that a qualified wildlife biologist conducts a survey for nesting birds prior to any surface disturbing project activities. If active nests are located, protective buffers (the size depending on the habitat requirements of the species) will be determined by a USFS biologist based on best available science and avoided by project personnel and equipment to prevent destruction or disturbance of nests. For the May 1 through July 15 period, no ground disturbance will be allowed within these buffer zones until the birds are no longer actively breeding or rearing young. The start and end dates of this seasonal restriction may be altered by a USFS biologist due to site-specific information such as elevation and winter weather patterns which would affect breeding chronology or the presence of migratory species.

Damage to mature or standing dead trees shall be avoided to the extent practicable.

Drill sumps shall be constructed with a ramp (shallower on one end than the other) to prevent entrapment of animals and people.

DRILLING AND HOLE ABANDONMENT MEASURES

All holes drilled for the purpose of mineral exploration shall be plugged and sealed in a manner consistent with state of Nevada regulations and stricter requirements listed below. These activities must be conducted in order to prevent adverse changes in groundwater quality and quantity. Abandonment of drill holes shall be designed to ensure the safety of people, livestock, wildlife, and machinery within the project area.

A qualified professional should be at the drill site to record important hydrogeological information such as water table levels, water inflow rates, fracture/fault zones, voids, zones of lost circulation, and other useful information.

In contrast to current Nevada revised regulations NAC 534.4371, which allows screened bentonite chips or uncontaminated soil to be poured down a drill hole to plug it if the hole ends above the water table, all plugging material must be placed by tremie pipe or through the drill rods from the bottom of the hole upward. Abandonment material may be poured into the hole from the surface only if the drop is less than 30 feet. A cement cap must be placed directly on top of acceptable settled and set-up abandonment material.

Zones of lost circulation below the water table must be evaluated by the on-site qualified professional to ensure proper plugging. The zone must be indicated on the Forest Service Bore Hole Abandonment Report and explain what was done to re-establish circulation or how the zone was isolated with a drill hole plug/packer immediately above the zone during abandonment. Drill rods should never be greased to remedy zones of lost circulation. In the case that circulation is lost and does not return, the drill hole must be plugged from bottom to top in such a way that the plugging medium supports the surface cement plug.

NAC 534.4371 (7) should be followed in plugging lost circulation zones or water-producing zones:

“If there is evidence that water-draining formations (lost circulation), or water-bearing formations of different water quality or hydraulic head were encountered during the original borehole construction and if bentonite chips or bentonite grout is used as the plugging material, the driller must, in addition to the requirements of this section, place neat cement across the water-confining formations so that the plugging fluid penetrates the geologic formation to prevent the vertical movement of water. Any drilling casing or pipe that does not break free, and occludes the placement of neat cement across a confining formation, must be perforated so that the plugging fluid penetrates the annular space and the geologic formation in that interval.”

NAC 534.4371 (6) should be followed to plug a borehole with casing:

“If casing is set in a borehole, the borehole must be completed as a well. The borehole must be plugged pursuant to NAC 534.420, or the casing must be removed from the borehole when it is plugged. The upper portion of the borehole may be permanently cased if the annular space between the casing and the walls of the borehole is completely sealed from the bottom of the casing to the surface pursuant to NAC 534.380.”

Casing left in the borehole shall not extend above the ground surface.

WATER RESOURCE PROTECTION AND SEDIMENT CONTROL:

Any stream crossing improvements must first be approved by the USFS and completed following spring run-off and during seasonal low flow months.

Road and drill pad construction shall minimize soil and debris side-cast into perennial or ephemeral drainages.

Appropriate sediment barriers (such as certified weed free straw bale or silt fences) shall be installed downhill of drill sites to prevent and minimize movement of soil, when necessary as determined by USFS specialists.

Any use of surface or groundwater requires a permit from Nevada Division of Water Resources. It is the operator's responsibility to obtain all necessary permits or permissions.

Water or drilling effluent shall not be allowed to flow uncontrolled from drill sumps. The operator shall be prepared to shut down drilling activities if excessive ground water is encountered during the drilling process and cannot be controlled utilizing all available containment plans or Best Management Practices.

LIVESTOCK PROTECTION:

This is an active livestock allotment and as such livestock containment is necessary. Fences and gates shall not be cut or altered without prior USFS permission. All damage shall be corrected by the operator immediately upon discovery and the USFS shall be notified within 24 hours.

ROAD MAINTENANCE:

If plowing snow is necessary to provide safe access to work areas, it shall be done so as to minimize disturbance of the existing road base and eliminate debris side-cast to the extent practicable. Leaving a 2-inch snow floor after new snow falls is recommended.

Appropriate signage shall be placed to notify the public of road blockages and work in the area.

Any and all road maintenance shall be limited to the existing road dimensions to avoid unknown archeological sites that may exist adjacent to roads.

Equipment shall not be driven across cattle guards or bridges that are not capable of supporting the equipment load.

RECLAMATION AND CLOSURE:

The District Ranger, or authorized representative, shall be notified when operations are completed and when seasonal and/or final reclamation work will commence.

All project disturbances shall be recontoured and revegetated for reclamation upon completion of the project.

Prior to bond release, the operator must provide an as-built report to the District Ranger with a map showing final project disturbances, including road construction, laydown areas, drill pads and the locations of each drill hole.

B. **Bond.** Reclamation connected with this plan of operations is covered by a Reclamation Performance Bond dated _____ and signed by _____. (Principal) for the penal sum of _____. This Reclamation Performance Bond is a guarantee of faithful performance in accordance with the terms and conditions listed below, and with the reclamation requirements agreed upon in the plan of operations. This Reclamation Performance Bond also extends to and includes any unauthorized activities conducted in connection with this operation.

The bond amount for this Reclamation Performance Bond was based on a bond calculation worksheet. The bond amount may be adjusted during the term of this proposed plan of operations in response to changes in the operations or to changes in the economy. Both the Reclamation Performance Bond and the bond calculation worksheet are attached to and made part of this plan of operations.

Acceptable bond securities (subject to change) include:

1. Certified or cashier's check, bank draft, Post Office money order, cash, assigned certificate of deposit, assigned savings account, blanket bond, surety, or an irrevocable letter of credit equal to the penal sum of the bond; or
2. Negotiable Treasury bills and notes which are unconditionally guaranteed as to both principle and interest in an amount equal to their par value to the penal sum of the bond.

VII. TERMS AND CONDITIONS

If a bond is required, it must be furnished before approval of the plan of operations.

Information provided with this plan marked confidential will be treated in accordance with the agency's laws, rules, and regulations.

Approval of this plan does not constitute certification of ownership to any person named herein and/or recognition of the validity of any mining claim named herein.

Approval of this plan does not relieve me of my responsibility to comply with other applicable state or federal laws, rules, or regulations.

If previously undiscovered cultural resources (historic or prehistoric objects, artifacts, or sites) are exposed as a result of operations, those operations shall not proceed until notification is received from the Authorized Officer that provisions for mitigating unforeseen impacts as required by 36 CFR 228.4(e) and 36 CFR 800 have been complied with.

This plan of operations has been approved for a period of one year from the date of field implementation. A new or revised plan must be submitted in accordance with 36 CFR part 228, subpart A, if operations are to be continued after that time period.

VIII. OPERATING PLAN ACCEPTANCE

I/We have reviewed and agreed to comply with all conditions in this plan of operations including the required changes, modifications, special mitigation, and reclamation requirements. I/We understand that the bond will not be released until the Authorized Officer in charge gives written approval of the reclamation plan.

(Signature of Operator, or Authorized Representative)

(Date)

IX. OPERATING PLAN APPROVAL

(Name of Authorized Officer)

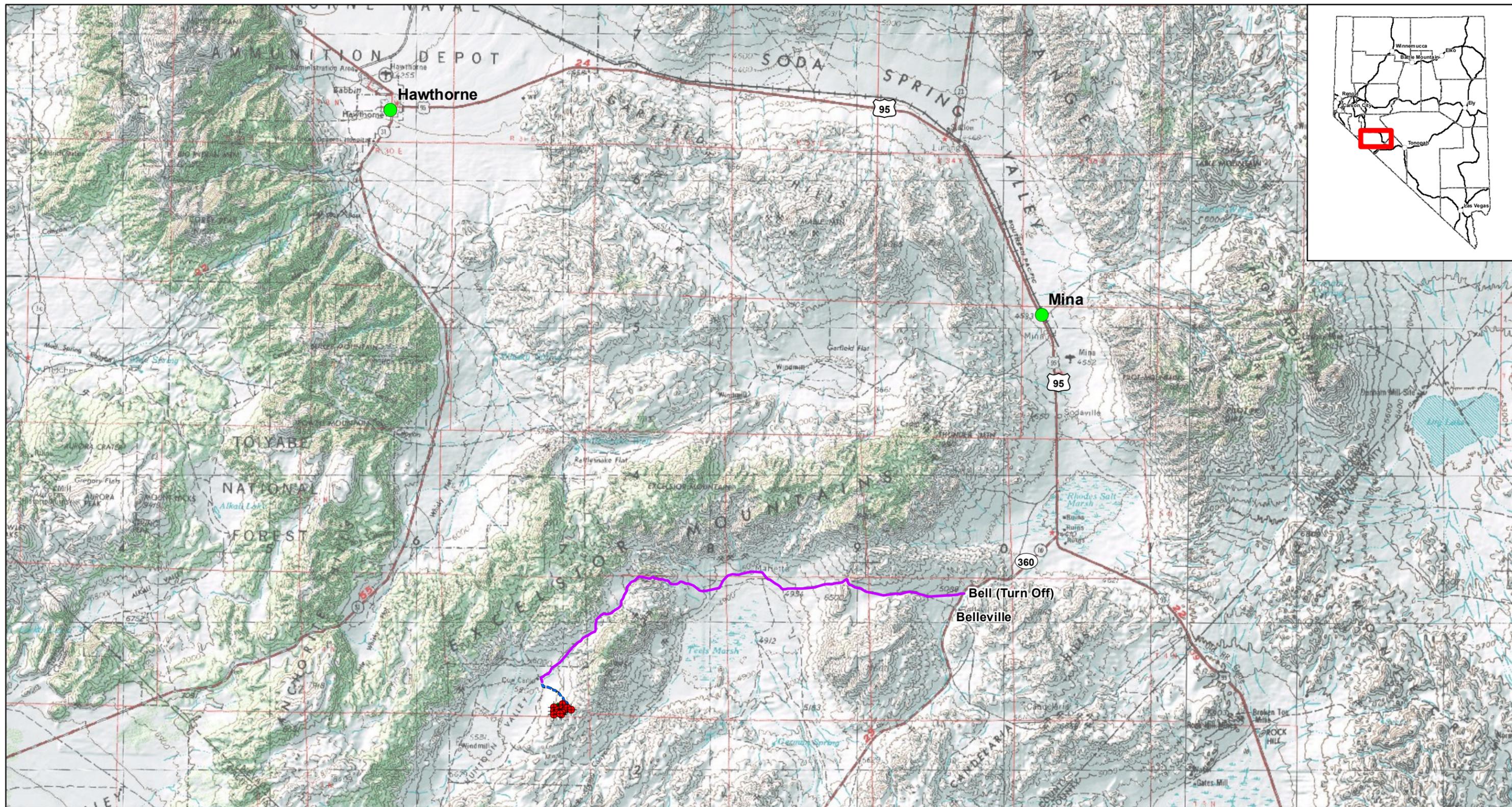
District Ranger
(Title)

(Signature of Authorized Officer)

(Date)

APPENDIX A

FIGURES



Explanation

- Major Towns
- ◆ Constructed Drill Sites
- Roads**
- Existing
- Proposed Constructed Road
- Existing with Additional Overland Travel
- Overland Travel
- Access Road

GREAT WESTERN MINING COMPANY

TARGET 4 EXPLORATION PROJECT

Project Location and Access

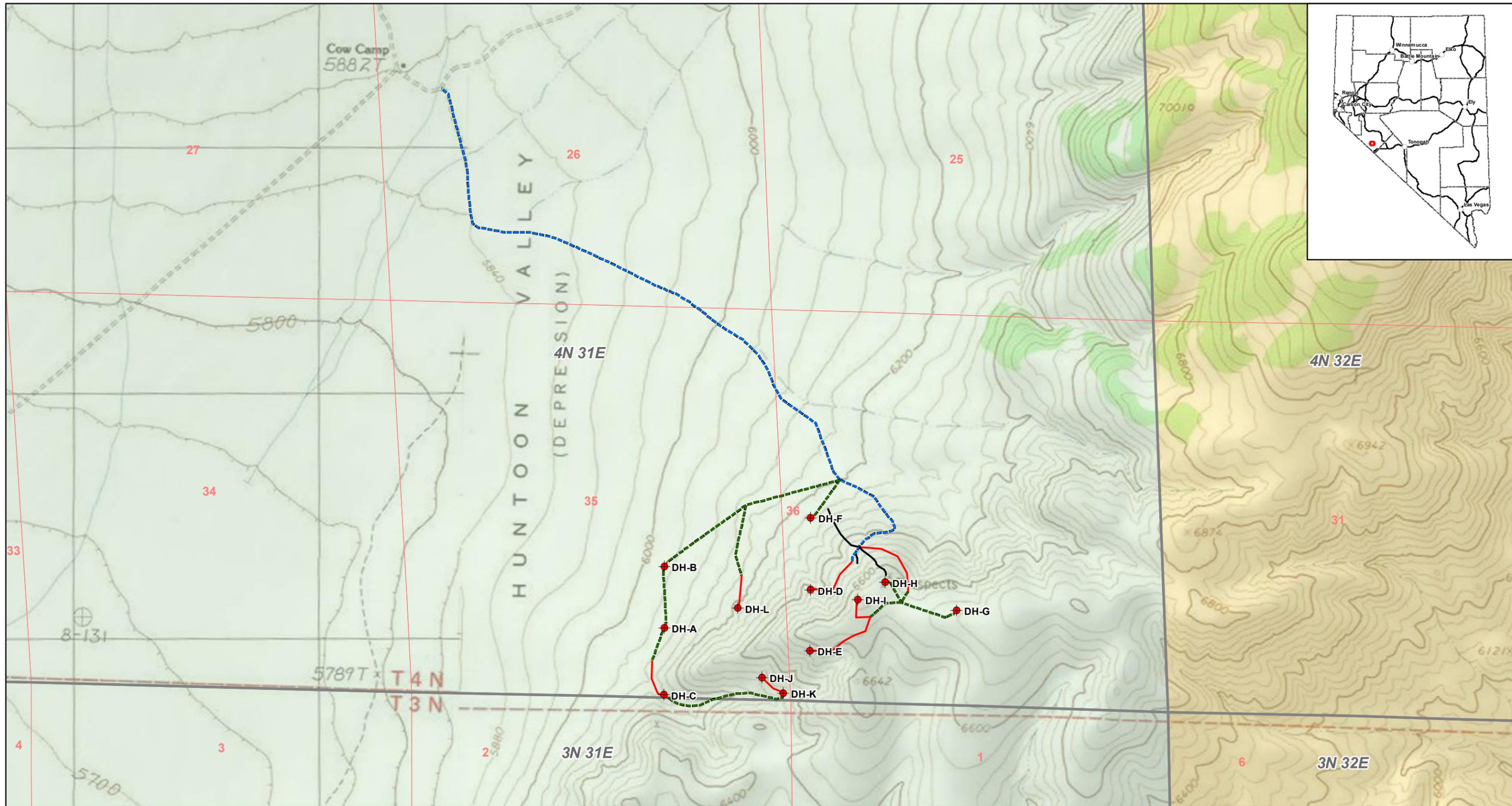
Figure 1



Projection: UTM Zone 11 North, NAD83

Date: 03/28/2014	Drawn By: JAK
Revised: 07/14/2014	Project No.: 3255
Base Map: USGS 24K Quads: Hutton Valley, Little Hutton Valley	
File Name: 3255Q_Target4_FIG1_LocAccess.mxd	





Explanation

Drill Sites

● Constructed Drill Sites

Roads

- Existing
- Proposed Constructed Road (5,093.3 Feet)
- Existing with Additional Overland Travel (10,053 Feet)
- Overland Travel (8,710.7 Feet)

Land Status

- Bureau of Land Management
- Forest Service



Projection: UTM Zone 11 North, NAD83



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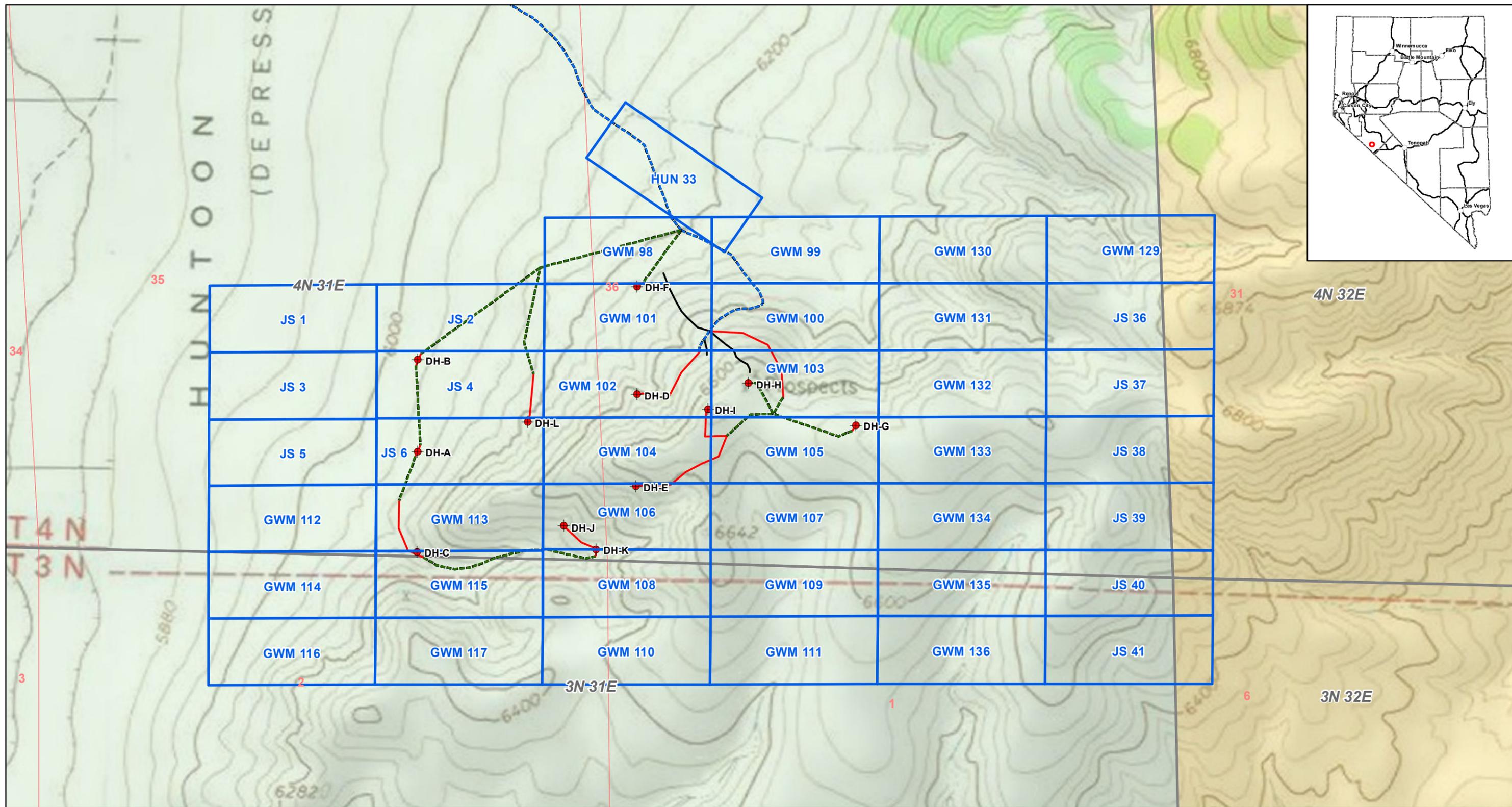
TARGET 4 EXPLORATION PROJECT

Project Area and Proposed
Exploration Activities

Figure 2

Date: 03/28/2014	Drawn By: JAK
Revised: 07/14/2014	Project No.: 3255
Base Map: USGS 24K Quads: Huntton Valley, Little Huntton Valley	
File Name: 3255Q_Target4.mxd	



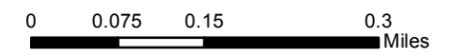


Explanation

- Claims
- Drill Sites**
- ◆ Constructed Drill Sites
- Roads**
- Existing
- Proposed Constructed Road (5,093.3 Feet)
- Existing with Additional Overland Travel (10,053 Feet)
- Overland Travel (8,710.7 Feet)

Land Status

- Bureau of Land Management
- Forest Service



Projection: UTM Zone 11 North, NAD83



GREAT WESTERN MINING COMPANY

TARGET 4 EXPLORATION PROJECT
Claims Map

Figure 3

Date: 03/28/2014	Drawn By: JAK
Revised: 07/16/2014	Project No.: 3255
Base Map: USGS 24K Quads: Hurntoon Valley, Little Hurntoon Valley	
File Name: 3255Q_Target4_Claims.mxd	



APPENDIX B

CLAIM INFORMATION

Claims in 2014 M4 Plan of Operations
Great Western Mining Company

Claim names			NMC serial numbers	
<u>from</u>		<u>to</u>	<u>from</u>	<u>to</u>
98	GWM	117	1008801	1008820
129	GWM	136	1008832	1008839
1	JS	6	1049822	1049827
36	JS	41	1048220	1048225

APPENDIX C

RECLAMATION COST ESTIMATE

The Reclamation Cost Estimate will be calculated by the USFS for the planned activities of the Project and included with the final version of the Plan.

APPENDIX D

SPILL PREVENTION PLAN, MATERIAL SAFETY DATA SHEETS, & BEST MANAGEMENT PRACTICES

**TARGET 4 EXPLORATION PROJECT
MINERAL COUNTY, NEVADA
SPILL PREVENTION PLAN**

OBJECTIVES

The purpose of this Spill Prevention Plan (Plan) is as follows:

- To identify all pollutant sources that may exist within the Target 4 Exploration Project Area.
- To identify Best Management Practices (BMPs) to prevent or reduce the quantity of potential pollutants discharged to the ground or surface water in order to minimize environmental impacts during and after the exploration project.

AVAILABILITY

A copy of this Plan shall be attached to the Project's Exploration Operating Plan, along with the Material Safety Data Sheets (MSDS) for Petroleum Products used onsite for vehicle maintenance or the exploration program (Attachment 1), Drilling Products (Attachment 1), and identified BMPs (Attachment 2). All contractors are responsible for familiarizing their personnel with the information pertaining to BMPs and spill prevention.

PREVENTIVE MAINTENANCE

Good housekeeping practices will be followed onsite during the exploration project:

- An effort will be made to store only enough product required to do the job.
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Manufacturers' recommendations for proper use and disposal will be followed.
- The Project Manager will inspect daily to insure proper use and disposal of materials onsite.

The contractor shall have a vehicle preventive maintenance program to insure that all vehicles are operating under optimum conditions and all hoses and fittings are in good condition and leak free. It is the responsibility of the operator, mechanic, tool pusher or other designee, to execute the repairs or preventive maintenance and complete any reporting required. Assignment for repair when equipment is in a remote location may be issued verbally by field superintendent or district manager.

SOURCE IDENTIFICATION

Pollutants

Potential sources of pollutants from drilling rigs, service vehicles, and other equipment includes oil, fuel, and lubricating grease. Additional sources of pollutants may include drilling fluids (mud and foam), borehole plugging materials, solvents, trash and other debris. These pollutants are not expected to come into contact with on-site soils or surface waters; however, BMPs shall be employed to prevent potential release of contaminants.

Construction Debris

To minimize impacts during precipitation events, trash bins shall be regularly inspected for leaks.

Spill Contingency Plan (GM-6)¹

Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, sorbent materials, sand, sawdust, and plastic and metal trash containers specifically for this purpose.

Well-maintained equipment will be used to perform the work, and when practicable, equipment maintenance will be performed offsite. In the event of oil, fuel, and lubricating grease leaks, clean-up will be conducted as soon as possible. If the leak is on pavement or a compacted surface, an oil absorbing product such as Absorb[®] will be applied. Once the clean up product has absorbed the leak, it will be swept up into watertight drums or bins, and disposed of according to federal, state, or local regulations. If the leak occurs on soil, the contaminated soil will be removed and disposed of according to federal, state, or local regulations. In the event of a major spill the following actions should be taken, in addition to any federal, state, and local health and safety regulations:

1. Contain the spread or migration of the spill, using on-hand supply of erosion control structures and/or by creating dirt berms, as feasible and necessary. Also utilize the materials and equipment stored onsite to control the spill.
2. Notify the environmental or project manager immediately.
3. Within 24 hours of an identified spill, the site manager or a designated representative will notify the following local and state agencies:
 - Forest Service (Jeff Ulrich, Bridgeport District Ranger) - (760) 932-5801
 - Nevada Division of Environmental Protection - (775) 687-4670
 - Emergency Response Hotline - (888) 331-6337

¹ Specific BMPs are located in Attachment 2.

In case of an emergency, relevant phone numbers are provided below:

Emergency calls: (775) 945-1420 (Nevada Highway Patrol)
(775) 945-5484 (Mineral County Sheriff)

Fire: (775) 945-7487 (Day & Zimmermann Hawthorne Corporation Fire & Emergency)

Hospital (775) 945-2461 (Mount Grant General Hospital)

4. This Plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.

BEST MANAGEMENT PRACTICES

- During construction, water will be used for dust control, mixing of grout, and cleanup. Water used for dust control will be sprayed over the ground at a rate which will moisten the soil but not cause runoff.
- It is the responsibility of the contractor to define construction staging areas to minimize footprint impacts, and to prevent impacts to water courses and other sensitive areas.
- The contractor is responsible for maintaining water-tight trash bins or dumpsters on the project site to minimize leakage to ground surface. Contractors will be responsible for maintaining contained areas for concrete wash-out and properly disposing of concrete, if used.
- The Project supervisor shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances).
- The following BMPs will be utilized as appropriate, and copies of each BMP are included in Attachment 2:
 - Spill Prevention and Control (GM-6)
 - Vehicle and Equipment Maintenance and Fueling (GM-8)
 - Material Delivery, Handling, Storage and Use (GM-10)
 - Liquid Waste Management (GM-13)
 - Hazardous Waste Management (GM-17)

ATTACHMENT 1
MATERIAL SAFETY DATA SHEETS

**MATERIAL SAFETY DATA SHEETS
HYDROCARBONS**

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

CHEVRON and TEXACO REGULAR UNLEADED GASOLINES

Product Use: Fuel

Product Number(s): CPS201000 [See Section 16 for Additional Product Numbers]

Synonyms: Calco Regular Unleaded Gasoline, Chevron Regular Unleaded Gasoline, Texaco Unleaded Gasoline

Company Identification

Chevron Products Company
Marketing, MSDS Coordinator
6001 Bollinger Canyon Road
San Ramon, CA 94583
United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

ChevronTexaco Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

Technical Information: (510) 242-5357

SPECIAL NOTES: This MSDS applies to: all motor gasoline.

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %vol/vol
Benzene	71-43-2	0.1 - 4.9 %vol/vol
Toluene (methylbenzene)	108-88-3	1 - 17 %vol/vol
Ethyl benzene	100-41-4	0.1 - 3 %vol/vol
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	1330-20-7	1 - 15 %vol/vol
Butane	106-97-8	1 - 12 %vol/vol
Heptane	142-82-5	1 - 4 %vol/vol
Hexane	110-54-3	1 - 5 %vol/vol
Cyclohexane	110-82-7	1 - 3 %vol/vol
Methylcyclohexane	108-87-2	1 - 2 %vol/vol
Pentane, 2,2,4-trimethyl- (Isooctane)	540-84-1	1 - 13 %vol/vol
Naphthalene	91-20-3	0.1 - 2 %vol/vol

Ethanol	64-17-5	0 - 10 %vol/vol
Methyl tert-butyl ether (MTBE)	1634-04-4	0 - 15 %vol/vol
Tertiary amyl methyl ether (TAME)	994-05-8	0 - 17 %vol/vol
Ethyl tert-butyl ether (ETBE)	637-92-3	0 - 18 %vol/vol

Information on ingredients that are considered Controlled Products and/or that appear on the WHMIS Ingredient Disclosure List (IDL) is provided as required by the Canadian Hazardous Products Act (HPA, Sections 13 and 14). Ingredients considered hazardous under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, are also listed. See Section 15 for additional regulatory information.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

- EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE
- HARMFUL OR FATAL IF SWALLOWED - MAY CAUSE LUNG DAMAGE IF SWALLOWED
- VAPOR HARMFUL
- CAUSES EYE AND SKIN IRRITATION
- LONG-TERM EXPOSURE TO VAPOR HAS CAUSED CANCER IN LABORATORY ANIMALS
- KEEP OUT OF REACH OF CHILDREN
- TOXIC TO AQUATIC ORGANISMS

IMMEDIATE HEALTH EFFECTS

Eye: Contact with the eyes causes irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death.

Inhalation: The vapor or fumes from this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing. Breathing this material at concentrations above the recommended exposure limits may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Reproduction and Birth Defects: This material is not expected to cause birth defects or other harm to the developing fetus based on animal data.

Cancer: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains benzene, which has been classified as an A1 Group Confirmed Human Carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH).

See Section 11 for additional information. Risk depends on duration and level of exposure.

SECTION 4 FIRST AID MEASURES

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get medical attention if irritation persists.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

See Section 7 for proper handling and storage.

FLAMMABLE PROPERTIES:

Flashpoint: (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)

Autoignition: > 280 °C (> 536 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6 (Typical)

EXTINGUISHING MEDIA: Dry Chemical, CO₂, AFFF Foam or alcohol resistant foam if >15% volume polar solvents (oxygenates).

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: Use water spray to cool fire-exposed containers and to protect personnel. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Do not store in open or unlabeled containers. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. Never siphon gasoline by mouth.

Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'. Improper filling of portable gasoline containers creates danger of fire. Only dispense gasoline into approved and properly labeled gasoline containers. Always place portable containers on the ground. Be sure pump nozzle is in contact with the container while filling. Do not use a nozzle's lock-open device. Do not fill portable containers that are inside a vehicle or truck/trailer bed.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Nitrile Rubber, Polyurethane, Viton.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Country/ Agency	TWA	STEL	Ceiling	Notation
Benzene	ACGIH	.5 ppm (weight)	2.5 ppm (weight)	--	Skin A1
Butane	ACGIH	800 ppm	--	--	--

		(weight)			
Cyclohexane	ACGIH	100 ppm (weight)	--	--	--
Ethanol	ACGIH	1000 ppm (weight)	--	--	A4
Ethyl benzene	ACGIH	100 ppm (weight)	125 ppm (weight)	--	A3
Ethyl tert-butyl ether (ETBE)	ACGIH	5 ppm (weight)	--	--	--
Gasoline	ACGIH	300 ppm (weight)	500 ppm (weight)	--	A3
Heptane	ACGIH	400 ppm (weight)	500 ppm (weight)	--	--
Hexane	ACGIH	50 ppm (weight)	--	--	Skin
Methyl tert-butyl ether (MTBE)	ACGIH	50 ppm (weight)	--	--	A3
Methyl tert-butyl ether (MTBE)	CVX	--	50 ppm	--	--
Methylcyclohexane	ACGIH	400 ppm (weight)	--	--	--
Naphthalene	ACGIH	10 ppm (weight)	15 ppm (weight)	--	Skin A4
Pentane, 2,2,4-trimethyl- (Isooctane)	ACGIH	300 ppm (weight)	--	--	--
Tertiary amyl methyl ether (TAME)	ACGIH	20 ppm (weight)	--	--	--
Tertiary amyl methyl ether (TAME)	CVX	--	50 ppm	--	--
Toluene (methylbenzene)	ACGIH	50 ppm (weight)	--	--	Skin A4
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	ACGIH	100 ppm (weight)	150 ppm (weight)	--	A4

NOTE ON OCCUPATIONAL EXPOSURE LIMITS: Consult local authorities for acceptable provincial values in Canada. Consult the Canadian Standards Association Standard 94.4-2002 Selection, Use and Care of Respirators.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow

Physical State: Liquid

Odor: Petroleum odor

pH: Not Applicable

Vapor Pressure: 5 psi - 15 psi (Typical) @ 37.8 °C (100 °F)

Vapor Density (Air = 1): 3 - 4 (Typical)

Boiling Point: 37.8°C (100°F) - 204.4°C (400°F) (Typical)

Solubility: Insoluble in water; miscible with most organic solvents.

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.7 g/ml - 0.8 g/ml @ 15.6°C (60.1°F) (Typical)

Viscosity: <1 SUS @ 37.8°C (100°F)

Evaporation Rate: No Data Available

Odor Threshold: No Data Available

Coefficient of Water/Oil Distribution: No Data Available

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

Sensitivity to Mechanical Impact: No.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The Draize eye irritation mean score in rabbits for a 24-hour exposure was: 0/110.

Skin Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: LD50: >3.75g/kg (rabbit).

Acute Oral Toxicity: LD50: >5 ml/kg (rat)

Acute Inhalation Toxicity: 4 hour(s) LD50: >20000mg/m³ (rat).

For additional information on the acute toxicity of the components, call the technical information center.

Subchronic Effects: Exposure of rats for 13 weeks (6 hr/day for 5 days/week) to the light ends of gasoline (up to 20,000 mg/m³) resulted in minimal responses of toxicity. There were no indications of neurotoxicity based morphological, functional and biochemical indices. There was also no evidence of immunotoxicity in the rats. However, when rats were exposed to gasoline vapor containing ethanol up to 20,000 mg/m³ there was evidence of both humoral immune suppression and mild astrogliosis.

Reproduction and Birth Defects: Exposure of rats to the light ends of gasoline at up to 20,000 mg/m³ had generally no impact upon reproductive abilities and did not cause birth defects.

Genetic Toxicity: Gasoline was not mutagenic, with or without activation, in the Ames assay (*Salmonella typhimurium*), *Saccharomyces cerevisiae*, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chromosomal aberrations in their bone marrow cells. Inhalation exposure of rats to the light ends of gasoline caused increased sister chromatid exchange in their peripheral white blood cells but did not cause an increase in micronucleated red blood cells in their bone marrow.

ADDITIONAL TOXICOLOGY INFORMATION:

Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2, 8 and 15 of this MSDS. More detailed information on the health hazard of specific gasoline components can be obtained calling the ChevronTexaco Emergency Information Center (see Section 1 for phone numbers).

Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice and kidney cancer in male rats. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated

gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene. The actual evidence for carcinogenicity in humans was considered inadequate.

To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)

96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)

48 hour(s) LC50: 3.0 mg/l (Daphnia magna)

96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)

This material is expected to be toxic to aquatic organisms. Gasoline studies have been conducted in the laboratory under a variety of test conditions with a range of fish and invertebrate species. An even more extensive database is available on the aquatic toxicity of individual aromatic constituents. The majority of published studies do not identify the type of gasoline evaluated, or even provide distinguishing characteristics such as aromatic content or presence of lead alkyls. As a result, comparison of results among studies using open and closed vessels, different ages and species of test animals and different gasoline types, is difficult.

The bulk of the available literature on gasoline relates to the environmental impact of monoaromatic (BTEX) and diaromatic (naphthalene, methylnaphthalenes) constituents. In general, non-oxygenated gasoline exhibits some short-term toxicity to freshwater and marine organisms, especially under closed vessel or flow-through exposure conditions in the laboratory. The components which are the most prominent in the water soluble fraction and cause aquatic toxicity, are also highly volatile and can be readily biodegraded by microorganisms.

ENVIRONMENTAL FATE

This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by USEPA under RCRA (40CFR261), Environment Canada, or other State, Provincial, and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

TC Shipping Description: GASOLINE//3//UN1203//II

DOT Shipping Description: GASOLINE,3,UN1203,II

SECTION 15 REGULATORY INFORMATION
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REGULATORY LISTS SEARCHED:

01-1=IARC Group 1
01-2A=IARC Group 2A
01-2B=IARC Group 2B
35=WHMIS IDL

The following components of this material are found on the regulatory lists indicated.

Benzene	01-1, 35
Butane	35
Cyclohexane	35
Ethanol	01-1, 35
Ethyl benzene	01-2B, 35
Gasoline	01-2B
Heptane	35
Hexane	35
Methylcyclohexane	35
Naphthalene	01-2B, 35
Pentane, 2,2,4-trimethyl- (Isooctane)	35
Toluene (methylbenzene)	35
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	35

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: DSL (Canada), EINECS (European Union), KECI (Korea), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: AICS (Australia), ENCS (Japan), IECSC (China), PICCS (Philippines).

WHMIS CLASSIFICATION:

Class B, Division 2: Flammable Liquids
Class D, Division 2, Subdivision A: Very Toxic Material - Carcinogenicity
Class D, Division 2, Subdivision B: Toxic Material - Skin or Eye Irritation

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations. (See Hazardous Products Act (HPA), R.S.C. 1985, c.H-3,s.2).

MSDS PREPARATION:

This Material Safety Data Sheet has been prepared by the Toxicology and Health Risk Assessment Unit, ERTC, P.O. Box 1627, Richmond, CA 94804, (888)676-6183.

Revision Date: 08/30/2005

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SECTION 16 OTHER INFORMATION

Additional Product Number(s): CPS201023, CPS201054, CPS201055, CPS201075, CPS201090, CPS201105, CPS201106, CPS201120, CPS201121, CPS201122, CPS201126, CPS201128, CPS201131, CPS201136, CPS201141, CPS201142, CPS201148, CPS201153, CPS201158, CPS201161, CPS201162, CPS201168, CPS201181, CPS201185, CPS201186, CPS201188, CPS201216, CPS201217, CPS201218, CPS201236, CPS201237, CPS201238, CPS201266, CPS201267, CPS201268, CPS201277, CPS201278, CPS201279, CPS201286, CPS201287, CPS201289, CPS201296, CPS201297, CPS201298, CPS201849, CPS201850, CPS201855, CPS201856, CPS201857, CPS204000, CPS204001, CPS204002, CPS204003, CPS204010, CPS204011, CPS204022, CPS204023, CPS204046, CPS204047, CPS204070, CPS204071, CPS204088, CPS204089, CPS204104, CPS204105, CPS204116, CPS204117, CPS204140, CPS204141, CPS204164, CPS204165, CPS204188, CPS204189, CPS204200, CPS204201, CPS204212, CPS204213, CPS204224, CPS204225, CPS204248, CPS204249, CPS204272, CPS204273, CPS204290, CPS204291, CPS204322, CPS204323, CPS204324, CPS204350, CPS204352, CPS204354, CPS204356, CPS204358, CPS204359, CPS204364, CPS204365, CPS204370, CPS204371, CPS204376, CPS204377, CPS204382, CPS204383, CPS204388, CPS204389, CPS204394, CPS204395, CPS204400, CPS204401, CPS204406, CPS204407, CPS204412, CPS204413, CPS204418, CPS204419, CPS204424, CPS204425, CPS204430, CPS204431, CPS204436, CPS204437, CPS204442, CPS204446, CPS204450, CPS204454, CPS204458, CPS204462, CPS204466, CPS204467, CPS204484, CPS204485, CPS204502, CPS204503, CPS204520, CPS204521, CPS204538, CPS204539, CPS204556, CPS204557, CPS204574, CPS204575, CPS204592, CPS204593, CPS204610, CPS204611, CPS204628, CPS204629, CPS204646, CPS204647, CPS204664, CPS204665, CPS204682, CPS204690, CPS204691, CPS204696, CPS204697, CPS204702, CPS204703, CPS204708, CPS204709, CPS204721, CPS204722, CPS204727, CPS204728, CPS241765

REVISION STATEMENT: This is a new Material Safety Data Sheet.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - ChevronTexaco	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

COASTAL CORP

-- DIESEL FUEL NO. 2

===== MSDS Safety Information =====

FSC: 9140

NIIN: 00-000-0184

MSDS Date: 03/22/2000

MSDS Num: BRZXD

Product ID: DIESEL FUEL NO. 2

MFN: 01

Responsible Party

Cage: 46684

Name: COASTAL CORP

Address: 9 GREENWAY PLAZA

City: HOUSTON TX 77046

Info Phone Number: 713-877-6732 / FAX 713-877-6754

Emergency Phone Number: 713-877-1400

Resp. Party Other MSDS No.: MSDS NUMBER: A0006.MSD

Preparer's Name: DELNO D. MALZAHN, CIH

Chemtrec IND/Phone: (800)424-9300

Published: Y
=====

Contractor Summary =====

Cage: 46684

Name: COASTAL CORP

Address: 9 GREENWAY PLAZA

City: HOUSTON TX 77046

Phone: 713-877-6732
=====

Item Description Information =====

Item Name: USED TO BE 26648

Specification Number: VV-F-800

Type/Grade/Class: DF2,LOW SULFUR

Unit of Issue: GL

UI Container Qty: X

Type of Container: UNKNOWN
=====

Ingredients =====

Cas: 68476-34-6

Name: PETROLEUM MID-DISTILLATE

Percent by Wt: 100.

Other REC Limits: NONE RECOMMENDED

OSHA PEL: NOT ESTABLISHED

ACGIH TLV: NOT ESTABLISHED
=====

Health Hazards Data =====

LD50 LC50 Mixture: NONE PROVIDED BY MFR

Carcinogenicity Inds - NTP: NO

IARC: NO

OSHA: NO

Effects of Exposure: ACUTE: EYE: SLIGHT TO MODERATE EYE IRRITATION. SKIN: MODERATELY TO EXTREMELY IRRITATING. INHALATION: INHALATION CAN BE IRRITATING TO THE MUCOUS MEMBRANE AND RESPIRATORY TRACT. INGESTION: GASTRIC IRRITATION. ASPIRATION HAZARD IF VOMITING OCCURS. CHRONIC: PROLONGED AND REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.

Explanation Of Carcinogenicity: NONE PROVIDED BY MFR

Signs And Symptions Of Overexposure: SKIN: REDNESS, DRYING TO BURNS OR BLISTERING OF SKIN. INHALATION: WILL PRODUCE SYMPTOMS OF INTOXICATION SUCH AS HEADACHE, DIZZINESS, NAUSEA, VOMITING, LOSS OF COORDINATION. INGESTION: ABDOMINAL PAIN, MILD EXCITATION, LOSS OF CONSCIOUSNESS, CONVULSION, CYANOSIS, CONGESTION AND CAPILLARY HEMORRHAGING OF THE LUNG AND INGERNAL ORGANS.

Medical Cond Aggravated By Exposure: MAY AGGRAVATE PRE-EXISTING DERMATITIS.

First Aid: EYE: IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, INCLUDING UNDER THE EYELIDS. CONTACT A PHYSICIAN IMMEDIATELY, PREFERABLY AN OPHTHALMOLOGIST. SKIN: COOL THE EXPOSED AREA IMM EDIATELY. REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREAS WITH SOAP AND WATER. INHALATION: REMOVE TO FREAH AIR. IF BREATHING HAS STOPPED, APPPLY ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION. INGEST ION: DO NOT INDUCE VOMITING. IF SPONTANEOUS VOMITING OCCURS, HOLD THE VICTIMS HEAD LOWER THAN THEIR HIPS TO PREVENT ASPIRATION.

=====
 Handling and Disposal
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Spill Release Procedures: REMOVE SOURCES OF HEAT OR IGNITION INCLUDING INTERNAL COMBUSTION ENGINES AND POWER TOOLS. REMOVE SPILL WITH VACUUM TRUCKS OR PUMP AND SOAK UP RESIDUE WITH AN INERT ABSORBENT. DO NOT FLUSH TO SEWERS OR SURFACE WATER. VENTILATE AREA AND AVOID BREATHING VAPORS OR MISTS.

Neutralizing Agent: NONE PROVIDED BY MFR

Waste Disposal Methods: DISPOSE THROUGH A LICENSED WASTE DISPOSAL COMPANY. FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS.

Handling And Storage Precautions: STORE IN TIGHTLY CLOSED CONTAINERS IN A DRY, COOL PLACE, AWAY FROM INCOMPATIBLE SUBSTANCES OR SOURCES OF HEAT OR IGNITION. GROUND AND BOND ALL TRANSFER AND STORAGE EQUIPMENT TO PREVENT STATIC SPARKS A ND EQUIP WITH SELF-CLOSING VALVES, PRESSURE VACUUM BUNGS AND FLAME ARRESTORS.

Other Precautions: EMPTY CONTAINERS CAN CONTAIN RESIDUE AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION; THE Y MAY EXPLODE AND CUASE INJURY OR DEATH.

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 Fire and Explosion Hazard Information
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Flash Point Method: PMCC

Flash Point: =51.7C, 125.F

Autoignition Temp: =257.2C, 495.F

Lower Limits: 0.6

Upper Limits: 7.5

Extinguishing Media: DRY CHEMICAL, FORM CARBON DIOXIDE, AND WATER.

Fire Fighting Procedures: USE A WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.

USE A SMOTHERING TECHNIQUE FOR EXTINGUISHING FIRES OF THIS COMBUSTIBLE LIQUID. DO NOT USE A FORCE WATER STREAM DIRECTLY ON OIL FIRES AS THIS WILL TEN D TO SCATTER THE FIRE. FIREFIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.

Unusual Fire/Explosion Hazard: FLOWING OIL CAN BE IGNITED BY SELF GENERATED STATIC ELECTRICITY.

=====
 Control Measures
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Respiratory Protection: USE APPROVED RESPIRATORY PROTECTIVE EQUIPMENT FOR CLEANING LARGE SPILLS OR ENTRY INTO LARGE TANKS, VESSELS OR OTHER CONFINED SPACES.

Ventilation: PROVIDE ADEQUATE GENERAL AND LOCAL VENTILATION TO MAINTAIN AIRBORNE CHEMICAL CONCENTRATIONS BELOW APPLICABLE EXPOSURE LIMITS.

Protective Gloves: IMPERVIOUS GLOVES

Eye Protection: REMOVE CONTACT LENS, WEAR CHEMICAL SAFETY GLASSES OR GOGGLES

Other Protective Equipment: HAVE EMERGENCY EYE WASH AND SAFETY SHOWER

AVAILABLE.

Work Hygienic Practices: LAUNDRY CONTAMINATED CLOTHING PRIOR TO REUSE. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING OR SMOKING.

Supplemental Safety and Health: NONE PROVIDED BY MFR

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Physical/Chemical Properties

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HCC: F4

B.P. Text: 300F-675F

Decomp Text: NONE PROVIDED BY MFR

Vapor Pres: < 0.5 MMHG @ 20 DEG C

Vapor Density: 8(AIR=1)

Spec Gravity: 0.87 @ 60/60F

Viscosity: 1.9-4.1 CST @ 40 DEG C

Evaporation Rate & Reference: 0.01(BUTYL ACETATE=1)

Solubility in Water: INSOLUBLE.

Appearance and Odor: CLEAR TO AMBER, BLUE OR RED LIQUID, MILD PETROLEUM ODOR

Corrosion Rate: NONE PROVIDED BY MFR

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Reactivity Data

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Stability Indicator: YES

Stability Condition To Avoid: STABLE UNDER NORMAL CONDITIONS OF USE. AVOID HEAT, SPARKS, FLAMES AND BUILD-UP OF STATIC ELECTRICITY.

Materials To Avoid: STRONG OXIDIZING AGENTS

Hazardous Decomposition Products: CO, CO2, SO2, HYDROCARBONS

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: WILL NOT OCCUR

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Toxicological Information

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Ecological Information

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MSDS Transport Information

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Transport Information: DOMESTIC: DIESEL FUEL, 3, NA1993, PACKING GROUP III.

INTERNATIONAL: PETROLEUM DISTILLATES, NOS, 3, UN1268, PACKING GROUP III.

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Regulatory Information

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Sara Title III Information: SECTION 302 EPCRA EXTREMELY HAZARDOUS SUBSTANCES (EHS): NONE. SECTION 304 CERCLA HAZARDOUS SUBSTANCES: BENZENE, CAS# 71-43-2, 0-5.0 %, RQ 10 LB; TOLUENE CAS# 108-88-3, 0-25.0%, RQ 1000 LB; XYLENE, CAS# 1330-20-7, 0-25.0%, RQ 100 LB; ETHYL BENZENE, 100-41-4, 0-5.0%, RQ 1000 LB; N-HEXANE, 110-54-3, <3.5, RQ 5000 LB; HEXANE (OTHER ISOMERS), <9.0%, RQ 5000 LB; CUMENE, CAS# 98-82-8, 0-2.0%, 5000 LB; M ETHYL T-BUTYL ETHER, CAS# 1634-04-4, 0-15.0%, RQ 1000 LB. SECTION 311/312 HAZARD CATEGORIZATION: ACUTE, CHRONIC, & FIRE. SECTION 313 EPCRA TOXIC SUBSTANCES: SEE OTHER INFORMATION SECTION.

State Regulatory Information: CALIFORNIA PROPOSITION 65 WARNING- CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM MAY BE FOUND IN CRUDE OIL AND PETROLEUM PRODUCTS. ALTHOUGH IT IS POSSIBLE TO SUFFICIENTLY REFINA A CRUDE OIL OR ITS END PRODUCTS TO REMOVE THE POTENTIAL FOR CANCER, WE ARE ADVISING THAT ONE OR MORE OF THE LISTED CHEMICALS MAY BE PRESENT IN SOME DETECTABLE QUANTITIES. READ AND FOLLOW DIRECTIONS AND USE CARE WHEN HANDLING CRUDE OIL AND PETROLEUM PRODUCTS.

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Other Information

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 Other Information: SARA CON'T- SECTION 313 EPCRA TOXIC SUBSTANCES: BENZENE, CAS# 71-43-2, 0-5.0 %; TOLUENE CAS# 108-88-3, 0-25.0%; XYLENE, CAS# 1330-20-7, 0-25.0%; ETHYL BENZENE, 100-41-4, 0-5.0%; N-HEXANE, 110-54-3, < 3.5; HEXANE (OTHER ISOMERS), <9.0%; CUMENE, CAS# 98-82-8, 0-2.0%; T-BUTYL ALCOHOL, CAS# 75-65-0, 0-10.0%; METHYL T-BUTYL ETHER, CAS# 1634-04-4, 0-15.0%. SECTION 302 EPCRA EXTREMELY HAZARDOUS SUBSTANCES (EHS): NONE. SECTION 304 CERCLA HAZARDOUS SUBSTANCES: NONE. SECTION 311/312 HAZARD CATEGORIZATION: ACUTE, CHRONIC, & FIRE. SECTION 313 EPCRA TOXIC SUBSTANCES: NONE.
 =====

Transportation Information

=====
 Responsible Party Cage: 46684
 Trans ID NO: 43110
 Product ID: DIESEL FUEL NO. 2
 MSDS Prepared Date: 03/22/2000
 Review Date: 05/08/2001
 MFN: 1
 Tech Entry NOS Shipping Nm: DIESEL FUEL NO. 2
 Net Unit Weight: UNKNOWN
 Multiple KIT Number: 0
 Review IND: Y
 Unit Of Issue: GL
 Container QTY: X
 Type Of Container: UNKNOWN
 =====

Detail DOT Information

=====
 DOT PSN Code: EXF
 Symbols: D
 DOT Proper Shipping Name: DIESEL FUEL
 Hazard Class: 3
 UN ID Num: NA1993
 DOT Packaging Group: III
 Label: NONE
 Special Provision: B1
 Non Bulk Pack: 203
 Bulk Pack: 242
 Max Qty Pass: 60 L
 Max Qty Cargo: 220 L
 Vessel Stow Req: A
 =====

Detail IMO Information

=====
 IMO PSN Code: LMH
 IMO Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S. o
 IMDG Page Number: 3375
 UN Number: 1268
 UN Hazard Class: 3.3
 IMO Packaging Group: III
 Subsidiary Risk Label: -
 EMS Number: 3-07
 MED First Aid Guide NUM: 311
 =====

Detail IATA Information

=====
 IATA PSN Code: TJB
 IATA UN ID Num: 1268
 =====

IATA Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
 IATA UN Class: 3
 IATA Label: FLAMMABLE LIQUID
 UN Packing Group: III
 Packing Note Passenger: 309
 Max Quant Pass: 60L
 Max Quant Cargo: 220L
 Packaging Note Cargo: 310

=====
 Detail AFI Information
 =====

AFI PSN Code: TJB
 AFI Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
 AFI Hazard Class: 3
 AFI UN ID NUM: UN1268
 AFI Packing Group: III
 Special Provisions: P5
 Back Pack Reference: A7.3

=====
 HAZCOM Label
 =====

Product ID: DIESEL FUEL NO. 2
 Cage: 46684
 Company Name: COASTAL CORP
 Street: 9 GREENWAY PLAZA
 City: HOUSTON TX
 Zipcode: 77046
 Health Emergency Phone: 713-877-1400
 Label Required IND: Y
 Date Of Label Review: 05/08/2001
 Status Code: C
 Label Date: 11/08/1993
 Origination Code: F
 Chronic Hazard IND: Y
 Eye Protection IND: YES
 Skin Protection IND: YES
 Signal Word: WARNING
 Health Hazard: Moderate
 Contact Hazard: Moderate
 Fire Hazard: Slight
 Reactivity Hazard: None
 Hazard And Precautions: ACUTE: CONTACT MAY CAUSE MILD TO MODERATE IRRITATION
 AND DRYING. INHALATION MAY CAUSE RESPIRATORY TRACT IRRITATION AND CENTRAL
 NERVOUS SYSTEM EFFECTS. INGESTION MAY CAUSE STOMACH IRRITATION, GASTRITIS
 AND CENTRAL NERVOUS SYSTEM EFFECTS. ASPIRATION HAZARD

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 United States of America should seek competent professional advice to verify
 and assume responsibility for the suitability of this information to their
 particular situation regardless of similarity to a corresponding Department
 of Defense or other government situation.

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Ultra-Duty Grease EP

Product Number(s): CPS238011, CPS238012, CPS238013

Synonyms: Chevron Ultra-Duty Grease EP NLGI 2, Chevron Ultra-Duty Grease EP NLGI 1, Chevron Ultra-Duty Grease EP NLGI 0

Company Identification

ChevronTexaco Global Lubricants
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevron-lubricants.com

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

ChevronTexaco Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : lubemsds@chevron.com
Product Information: (800) LUBE TEK
MSDS Requests: (800) 414-6737

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	65 - 80 %weight
Lithium thickener	Mixture	5 - 15 %weight
Additives including	Mixture	10 - 20 %weight
Zinc dialkyldithiophosphate	68649-42-3	1 - 5 %weight

SECTION 3 HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, apply a waterless hand cleaner, mineral oil, or petroleum jelly. Then wash with soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

FLAMMABLE PROPERTIES:

Flashpoint: 274 °C (525 °F) (Min)

Autoignition: NDA

Flammability (Explosive) Limits (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Phosphorus, Sulfur, Zinc, Lithium .

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Clean up spills immediately, observing precautions in Exposure Controls/Personal Protection section.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Keep out of the reach of children.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this

material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Neoprene, Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH_TLV	5 mg/m3	10 mg/m3		
Highly refined mineral oil (C15 - C50)	OSHA_PEL	5 mg/m3			

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Red

Physical State: Semi-solid

Odor: Petroleum odor

pH: NA

Vapor Pressure: <0.01 mmHg @ 100°C (212°F)

Vapor Density (Air = 1): >1

Boiling Point: >260°C (500°F)

Solubility: Soluble in hydrocarbon solvents; insoluble in water.

Melting Point: 165°C (329°F) (Min)

Specific Gravity: 0.9 @ 15.6°C (60.1°F) / 15.6°C (60.1°F)

Density: @ 15°C (59°F)

Viscosity: 18 cSt @ 100°C (212°F) (Min)

Evaporation Rate: NDA

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: Hydrogen Sulfide (Temperatures >149 °F (65 °C))

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The Draize eye irritation mean score in rabbits for a 24-hour exposure was: 6.7/110.

Skin Irritation: For a 24-hour exposure, the Primary Irritation Score (PIS) in rabbits is: 0.6/8.0.

Skin Sensitization: No product toxicology data available.

Acute Dermal Toxicity: 24 hour(s) LD50: >2g/kg (rat).

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

The toxicity of this material to aquatic organisms has not been evaluated. Consequently, this material should be kept out of sewage and drainage systems and all bodies of water.

ENVIRONMENTAL FATE

This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Name: NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

DOT Hazard Class: NOT APPLICABLE

DOT Identification Number: NOT APPLICABLE

DOT Packing Group: NOT APPLICABLE

Additional Information: NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

IMO/IMDG Shipping Name: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORTATION UNDER THE IMDG CODE

IMO/IMDG Hazard Class: NOT APPLICABLE

IMO/IMDG Identification Number: NOT APPLICABLE

IMO/IMDG Packing Group: NOT APPLICABLE

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: NO

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

4_1=IARC Group 1	15=SARA Section 313
4_12A=IARC Group 2A	16=CA Proposition 65
4_12B=IARC Group 2B	17=MA RTK
05=NTP Carcinogen	18=NJ RTK
06=OSHA Carcinogen	19=DOT Marine Pollutant
09=TSCA 12(b)	20=PA RTK

No components of this material were found on the regulatory lists above.

Zinc dialkyldithiophosphate 15

CHEMICAL INVENTORIES:

AUSTRALIA: All the components of this material are listed on the Australian Inventory of Chemical Substances (AICS).

CANADA: All the components of this material are on the Canadian DSL or have been notified under the New Substance Notification Regulations, but have not yet been published in the Canada Gazette.

EUROPEAN UNION: All the components of this material are in compliance with the EU Seventh Amendment Directive 92/32/EEC.

JAPAN: All the components of this product are on the Existing & New Chemical Substances (ENCS) inventory in Japan, or have an exemption from listing.

KOREA: This material contains components that require notification before sale or importation into Korea.

PHILIPPINES: All the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).

UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Grease)

WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 1 Flammability: 1 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1-16

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
			CAS	-	Chemical Abstract Service Number
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the ChevronTexaco Energy Research & Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.



MATERIAL SAFETY DATA SHEET

Conoco Gear Oil (All Grades)

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Conoco Gear Oil (All Grades)
Synonyms: Conoco Gear Oil 68
Conoco Gear Oil 100
Conoco Gear Oil 150
Conoco Gear Oil 220
Conoco Gear Oil 320
Conoco Gear Oil 460
Conoco Gear Oil 680
Conoco Gear Oil 1000
Conoco Gear Oil 1500
Intended Use: Industrial Gear Lubricant
Chemical Family: Petroleum Hydrocarbon

Responsible Party: ConocoPhillips Lubricants
600 N. Dairy Ashford
Houston, Texas 77079-1175

Customer Service: 800-640-1956
Technical Information: 800-255-9556

Emergency Overview

24 Hour Emergency Telephone Numbers:

Spill, Leak, Fire or Accident Call CHEMTREC:
North America: (800) 424-9300
Others: (703) 527-3887 (collect)

California Poison Control System: (800) 356-3219

Health Hazards/Precautionary Measures: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Physical Hazards/Precautionary Measures: Keep away from all sources of ignition.

Appearance: Clear and bright
Physical Form: Liquid
Odor: Characteristic petroleum

NFPA 704 Hazard Class:

Health: 1 (Slight)
Flammability: 1 (Slight)
Instability: 0 (Least)

2. COMPOSITION / INFORMATION ON INGREDIENTS

NON-HAZARDOUS COMPONENTS					
Component / CAS No:	Percent (%)	ACGIH:	OSHA:	NIOSH:	Other:
Lubricant Base Oil (Petroleum) VARIOUS	66 - 99	5mg/m ³ TWA 10 mg/m ³ STEL	5 mg/m ³ TWA	2500 mg/m ³ IDLH	as Oil Mist, if Generated 5 mg/m ³ NOHSC TWA
Additives PROPRIETARY	2 - 3	NE	NE	NE	NE

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

1%=10,000 PPM.

NE=Not Established

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness, and a burning sensation. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin leading to dermatitis (inflammation). No harmful effects from skin absorption are expected.

Inhalation (Breathing): No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

Ingestion (Swallowing): No harmful effects expected from ingestion.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, irritation of the respiratory tract, nausea, vomiting, diarrhea. Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation.

Cancer: There is inadequate information to evaluate the cancer hazard of this material. See Section 11 for information on the individual components, if any.

Target Organs: No data available for this material.

Developmental: No data available for this material.

Other Comments: None Known

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders, respiratory (asthma-like) disorders.

4. FIRST AID MEASURES

Eye: If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Wipe material from skin and remove contaminated shoes and clothing. Cleanse affected area(s) thoroughly by washing with mild soap and water and, if necessary, a waterless skin cleanser. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

Notes to Physician: High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. Often these injuries require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury.

Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. FIRE-FIGHTING MEASURES

Flammable Properties:

Flash Point:	> 399°F / 204°C
Test Method:	Cleveland Open Cup (COC), ASTM D92
OSHA Flammability Class:	Not applicable
LEL%:	No data
UEL%:	No data
Autoignition Temperature:	No data

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire. Vapors are heavier than air and can accumulate in low areas.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release.

Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

7. HANDLING AND STORAGE

Handling: Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Use good personal hygiene practices.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional engineering controls may be required.

Personal Protective Equipment (PPE):

Respiratory: A NIOSH certified air purifying respirator with a Type 95 (R or P) particulate filter may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a NIOSH approved self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode if there is potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

Skin: The use of gloves impervious to the specific material handled is advised to prevent skin contact and possible irritation (see manufacturers literature for information on permeability).

Eye/Face: Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

Other Protective Equipment: A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

Suggestions for the use of specific protective materials are based on readily available published data. Users should check with specific manufacturers to confirm the performance of their products.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

Appearance:	Clear and bright
Physical Form:	Liquid
Odor:	Characteristic petroleum
Odor Threshold:	No data

pH:	Not applicable
Vapor Pressure (mm Hg):	<1
Vapor Density (air=1):	>1
Boiling Point:	No data
Melting/Freezing Point:	< 32°F / 0°C
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	0.87-0.91
Bulk Density:	7.3 - 7.6 lbs/gal
Viscosity cSt @ 100°C:	8.8 - 70
Viscosity cSt @ 40°C:	60 - 1600
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	<1
Flash Point:	> 399°F / 204°C
Test Method:	Cleveland Open Cup (COC), ASTM D92
LEL%:	No data
UEL%:	No data
Autoignition Temperature:	No data
Decomposition Temperature:	No data

10. STABILITY AND REACTIVITY

Stability: Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents, strong acids, strong bases.

Hazardous Decomposition Products: Combustion can yield carbon, nitrogen and sulfur oxides.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Chronic Data:

Lubricant Base Oil (Petroleum) - CAS: VARIOUS

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including solvent extraction, hydrotreating, and/or dewaxing to remove aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Acute Data:

Lubricant Base Oil (Petroleum) - CAS: VARIOUS

Dermal LD50 = >2 g/kg

LC50 = No information available

Oral LD50 = >5 g/kg

Additives - CAS: PROPRIETARY

Dermal LD50 = No information available

LC50 = No information available

Oral LD50 = No information available

12. ECOLOGICAL INFORMATION

Lubricant oil basestocks are complex mixtures of hydrocarbons (primarily branched chain alkanes and cycloalkanes) ranging in carbon number from C15 to C50. The aromatic hydrocarbon content of these mixtures varies with the severity of the refining process. White oils have negligible levels of aromatic hydrocarbons, whereas significant proportions are found in unrefined basestocks. Olefins are found only at very low concentrations. Volatilization is not significant after release of lubricating oil basestocks to the environment due to the very low vapor pressure of the hydrocarbon constituents. In water, lubricating oil basestocks will float and will spread at a rate that is viscosity dependent. Water solubilities are very low and dispersion occurs mainly from water movement with adsorption by sediment being the major fate process. In soil, lubricating oil basestocks show little mobility and adsorption is the predominant physical process.

Both acute and chronic ecotoxicity studies have been conducted on lubricant base oils. Results indicate that the acute aquatic toxicities to fish, Daphnia, Ceriodaphnia and algal species are above 1000 mg/l using either water accommodated fractions or oil in water dispersions. Since lubricant base oils mainly contain hydrocarbons having carbon numbers in the range C15 to C50, it is predicted that acute toxicity would not be observed with these substances due to low water solubility. Results from chronic toxicity tests show that the no observed effect level (NOEL) usually exceeds 1000 mg/l for lubricant base oils with the overall weight of experimental evidence leading to the conclusion that lubricant base oils do not cause chronic toxicity to fish and invertebrates.

Large volumes spills of lubricant base oils into water will produce a layer of undissolved oil on the water surface that will cause direct physical fouling of organisms and may interfere with surface air exchange resulting in lower levels of dissolved oxygen. Petroleum products have also been associated with causing taint in fish even when the latter are caught in lightly contaminated environments. Highly refined base oils sprayed onto the surface of eggs will result in a failure to hatch.

Extensive experience from laboratory and field trials in a wide range of crops has confirmed that little or no damage is produced as a result of either aerosol exposure or direct application of oil emulsion to the leaves of crop plants. Base oils incorporated into soil have resulted in little or no adverse effects on seed germination and plant growth at contamination rates up to 4%.

13. DISPOSAL CONSIDERATIONS

This material under most intended uses would become used oil due to contamination by physical or chemical impurities. RECYCLE ALL USED OIL. While being recycled, used oil is regulated by 40 CFR 279. Use resulting in chemical or physical change or contamination may also subject it to regulation as hazardous waste. Under federal regulations, used oil is a solid waste managed under 40 CFR 279. However, in California, used oil is managed as hazardous waste until tested to show it is not hazardous. Consult state and local regulations regarding the proper handling of used oil. In the case of used oil, the intent to discard it may cause the used oil to be regulated as hazardous waste.

Contents should be completely used and containers emptied prior to discard. Rinsate may be considered a RCRA hazardous waste and must be disposed of with care and in compliance with federal, state and local regulations. Large empty containers, such as drums, should be returned to the distributor or a drum reconditioner. To assure proper disposal of small empty containers, consult with state and local regulations and disposal authorities.

14. TRANSPORTATION INFORMATION

DOT

Shipping Description: Not Regulated

Note: Material is unregulated unless in container of 3500 gallons or more, then provisions of 49 CFR Part 130 apply for land shipment.

IMDG

Shipping Description: Not regulated

ICAO/IATA

Shipping Description: Not regulated

15. REGULATORY INFORMATION

U.S. Regulations:

EPA SARA 311/312 (Title III Hazard Categories)

Acute Health:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

SARA - Section 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:
--None Known--

EPA (CERCLA) Reportable Quantity (in pounds):

--None Known--

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372:
-- None Known --

California Proposition 65:

Warning: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

-- None Known --

Carcinogen Identification:

This material has not been identified as a carcinogen by NTP, IARC, or OSHA. See Section 11 for carcinogenicity information of individual components, if any.

TSCA:

All components are listed on the TSCA inventory.

16. OTHER INFORMATION

Issue Date:	13-Oct-2005
Previous Issue Date:	07-Sep-2004
Product Code:	47620-47625, 47607-47609
Revised Sections or Basis for Revision:	Product name (Section 1)
MSDS Code:	787305

Disclaimer of Expressed and implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Delo® 400

Product Number(s): CPS235101, CPS235109, CPS235117, CPS235118, CPS235119, CPS235120, CPS235200

Synonyms: Chevron Delo® 400 Multigrade SAE 15W-40, Chevron Delo® 400 SAE 10W, Chevron Delo® 400 SAE 10W-30, Chevron Delo® 400 SAE 20, Chevron Delo® 400 SAE 30, Chevron Delo® 400 SAE 40, Chevron Delo® 400 SAE 50

Company Identification

ChevronTexaco Global Lubricants
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevron-lubricants.com

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

ChevronTexaco Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : lubemsds@chevrontexaco.com
Product Information: (800) LUBE TEK
MSDS Requests: (800) 414-6737

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 95 %weight
Zinc alkyl dithiophosphate	68649-42-3	1 - 5 %weight

SECTION 3 HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To

remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

FLAMMABLE PROPERTIES:

Flashpoint: (Cleveland Open Cup) 200 °C (392 °F) (Min)

Autoignition: No Data Available

Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Keep out of the reach of children.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m ³	10 mg/m ³	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m ³	--	--	--

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Brown

Physical State: Liquid

Odor: Petroleum odor

pH: Not Applicable

Vapor Pressure: <0.01 mmHg @ 37.8 °C (100 °F)

Vapor Density (Air = 1): >1

Boiling Point: >315°C (599°F)

Solubility: Soluble in hydrocarbons; insoluble in water

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.87 - 0.9 @ 15.6°C (60.1°F) / 15.6°C (60.1°F)

Volatile Organic

Compounds (VOC) : 1.1 %weight

Viscosity: 6.6 cSt @ 100°C (212°F) (Min)

SECTION 10 STABILITY AND REACTIVITY
--

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: No product toxicology data available.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

SECTION 12 ECOLOGICAL INFORMATION**ECOTOXICITY**

The toxicity of this material to aquatic organisms has not been evaluated. Consequently, this material should be kept out of sewage and drainage systems and all bodies of water.

ENVIRONMENTAL FATE

This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

Additional Information: NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

IMO/IMDG Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS

GOODS FOR TRANSPORT UNDER ICAO

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: NO
2. Delayed (Chronic) Health Effects: NO
3. Fire Hazard: NO
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

Zinc alkyl dithiophosphate 03, 06

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: DSL (Canada), ENCS (Japan), IECSC (China), PICCS (Philippines), TSCA (United States).

One or more components is listed on ELINCS (European Union). Secondary notification by the importer may be required.

One or more components does not comply with the following chemical inventory requirements: AICS (Australia), KECI (Korea).

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Motor oil)

WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 1 Flammability: 1 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

LABEL RECOMMENDATION:

Label Category : ENGINE OIL 1

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet:
5,8,9,10,16

Revision Date: 09/28/2005

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - ChevronTexaco	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the ChevronTexaco Energy Research & Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Drive Train Fluid HD

Product Number(s): CPS226601, CPS226607, CPS226608, CPS226610, CPS226627

Synonyms: Chevron Drive Train Fluid HD SAE 10W, Chevron Drive Train Fluid HD SAE 30, Chevron Drive Train Fluid HD SAE 50, Chevron Drive Train Fluid HD SAE 60, Chevron Drive Train Fluid HD - Dyed SAE 10W

Company Identification

ChevronTexaco Global Lubricants
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevron-lubricants.com

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

ChevronTexaco Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : lubemsds@chevron.com
Product Information: (800) LUBE TEK
MSDS Requests: (800) 414-6737

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	80 - 100 %weight
Zinc alkyl dithiophosphate	68649-42-3	1 - 5 %weight

SECTION 3 HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

Leaks/ruptures in high pressure system using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

FLAMMABLE PROPERTIES:

Flashpoint: (Cleveland Open Cup) 190 °C (374 °F) (Min)

Autoignition: NDA

Flammability (Explosive) Limits (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Nitrogen, Phosphorus, Sulfur, Zinc .

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed. Keep out of the reach of children.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this

material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH_TLV	5 mg/m3	10 mg/m3		
Highly refined mineral oil (C15 - C50)	OSHA_PEL	5 mg/m3			

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Varies depending on specification

Physical State: Liquid

Odor: Petroleum odor

pH: NA

Vapor Pressure: <0.01 mmHg @ 37.8°C (100°F)

Vapor Density (Air = 1): >1

Boiling Point: >315.6°C (600°F)
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: NA
Melting Point: NA
Specific Gravity: 0.88 - 0.91 @ 15.6°C (60.1°F) / 15.6°C (60.1°F)
Density: 0.88 kg/l - 0.91 kg/l @ 15°C (59°F)
Viscosity: 5.5 cSt - 24 cSt @ 100°C (212°F) (Min)
Evaporation Rate: NDA

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: Hydrogen Sulfide (Temperatures >149 °F (65 °C))

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: No product toxicology data available.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

The toxicity of this material to aquatic organisms has not been evaluated. Consequently, this material should be kept out of sewage and drainage systems and all bodies of water.

ENVIRONMENTAL FATE

This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Name: NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

DOT Hazard Class: NOT APPLICABLE

DOT Identification Number: NOT APPLICABLE

DOT Packing Group: NOT APPLICABLE

Additional Information: NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

IMO/IMDG Shipping Name: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORTATION UNDER THE IMDG CODE

IMO/IMDG Hazard Class: NOT APPLICABLE

IMO/IMDG Identification Number: NOT APPLICABLE

IMO/IMDG Packing Group: NOT APPLICABLE

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: NO

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

4_1=IARC Group 1	15=SARA Section 313
4_2A=IARC Group 2A	16=CA Proposition 65
4_2B=IARC Group 2B	17=MA RTK
05=NTP Carcinogen	18=NJ RTK
06=OSHA Carcinogen	19=DOT Marine Pollutant
09=TSCA 12(b)	20=PA RTK

The following components of this material are found on the regulatory lists indicated.

Zinc alkyl dithiophosphate 15, 18

CHEMICAL INVENTORIES:

AUSTRALIA: All the components of this material are listed on the Australian Inventory of Chemical Substances (AICS).

CANADA: All the components of this material are on the Canadian DSL or have been notified under the New Substance Notification Regulations, but have not yet been published in the Canada Gazette.

EUROPEAN UNION: All the components of this material are in compliance with the EU Seventh Amendment Directive 92/32/EEC.

JAPAN: All the components of this product are on the Existing & New Chemical Substances (ENCS) inventory in Japan, or have an exemption from listing.

KOREA: All the components of this product are on the Existing Chemicals List (ECL) in Korea.

PHILIPPINES: All the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).

UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Transmission fluid)

WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 1 Flammability: 1 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1-16

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
			CAS	-	Chemical Abstract Service Number
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the ChevronTexaco Energy Research & Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

**MATERIAL SAFETY DATA SHEETS
DRILLING ADDITIVES**

WYO-BEN INC -- ENVIROPLUG COARSE -- 6810-00N065827

=====
MSDS Safety Information
=====

FSC: 6810
MSDS Date: 05/01/1994
MSDS Num: CBDBW
LIIN: 00N065827
Tech Review: 02/16/1996
Product ID: ENVIROPLUG COARSE
Responsible Party
Cage: 0JWA0
Name: WYO-BEN INC
Box: 1979
City: BILLINGS MO 59103 US
Info Phone Number: 406-652-6351
Emergency Phone Number: 406-652-6351
Review Ind: N

=====
Contractor Summary
=====

Cage: 0JWA0
Name: WYO-BEN INC
Box: 1979
City: BILLINGS MO 59103 US
Phone: 406-652-6351

=====
Ingredients
=====

Cas: 1302-78-9
RTECS #: CT9450000
Name: BENTONITE; (BENTONITE CLAY)
OSHA PEL: 5 MG/M3 (DUST)
ACGIH TLV: 5 MG/M3 (DUST)
Ozone Depleting Chemical: N

Cas: 1318-93-0
Name: ACTIVATED MONTMORILLONITE CLAY; (SODIUM MONTMORILLONITE)
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)
Ozone Depleting Chemical: N

Cas: 14808-60-7
RTECS #: VV7330000
Name: SILICA, CRYSTALLINE - QUARTZ; (CRYSTALLINE SILICA (SIO*2) AS QUARTZ)
OSHA PEL: SEE TABLE Z-3
ACGIH TLV: 0.1 MG/M3 RDUST
Ozone Depleting Chemical: N

=====
Health Hazards Data
=====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry Inds - Inhalation: YES
Skin: YES
Ingestion: NO
Carcinogenicity Inds - NTP: YES
IARC: YES
OSHA: NO
Effects of Exposure: ACUTE:SKIN:POSSIBLE DRYING RESULTING IN DERMATITIS.
EYES:MECHANICAL IRRITANT. INHAL:SHORT TERM EXPOSURE TO DUST LEVELS

EXCEEDING PEL MAY CAUSE IRRITATION OF RESPIRATORY TRACT RESULTING IN DRY COUGH. INGEST:NO ADVERSE EFFECTS. CHRONIC:INHAL:LONG TERM EXPOSURE TO FREE SILICA CONTAINING AIRBORNE BENTONITE(EFTS OF OVEREXP)

Explanation Of Carcinogenicity: SILICA, CRYSTALLINE-QUARTZ:IARC MONOGRAPHS, SUPP, VOL 7, PG 341, 1987:GRP 2A. NTP 7TH ANNUAL RPT ON CARCINS, (SUPP DATA)

Signs And Symptions Of Overexposure: HLTH HAZ:DUST WHERE LEVELS ARE HIGHER THAN TLV'S MAY LEAD TO DEVELOPMENT OF SILICOSIS OR OTHER RESPIRATORY PROBLEMS. PERSISTENT DRY COUGH & LABORED BREATHING UPON EXERTION ARE SYMPTOMATIC.

Medical Cond Aggravated By Exposure: INHALATION MAY AGGRAVATE EXISTING RESPIRATORY ILLNESS.

First Aid: INGEST:CALL MD IMMEDIATELY (FP N). SKIN:WASH W/SOAP & WATER UNTIL CLEAN. EYES:FLUSH W/WATER UNTIL IRRITATION CEASES (FOR AT LEAST 15 MINUTES). INHAL:MOVE TO AREA FREE FROM DUST. IF SYMPTOMS OF IRRITATION PERSIST CONTACT MD.

=====
Handling and Disposal
=====

Spill Release Procedures: AVOID BREATHING DUST; WEAR NIOSH/MSHA APPROVED RESPIRATOR FOR SILICA BEARING DUST. VACUUM UP TO AVOID GENERATING AIRBORNE DUST. AVOID USING WATER. PRODUCT SLIPPERY WHEN WETTED.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Methods: PRODUCT SHOULD BE DISPOSED OF I/A/W APPLICABLE LOCAL, STATE & FEDERAL REGULATIONS.

Handling And Storage Precautions: CLEAN UP SPILLS PROMPTLY TO AVOID MAKING DUST. STORAGE AREA FLOORS MAY BECOME SLIPPERY IF WETTED. AVOID PROLONGED INHALATION OF AIRBORNE DUST.

Other Precautions: NOTE:CONC LEVEL OF TOTAL FREE SILICA IN AIRBORNE DUST IS VARIABLE DEPENDING UPON ORIGIN OF BENTONITE ORE, FINENESS OF PRODUCT, MOISTURE CONTENT OF PRODUCT, LOCAL HUMIDITY & WIND CONDITIONS AT POINT OF USE.

=====
Fire and Explosion Hazard Information
=====

Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N). NONE FOR PRODUCT. ANY MEDIA CAN BE USED FOR PACKAGING.

Fire Fighting Procedures: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). PRODUCT BECOMES SLIPPERY WHEN WET.

Unusual Fire/Explosion Hazard: NONE. PRODUCT WILL NOT SUPPORT COMBUSTION.

=====
Control Measures
=====

Respiratory Protection: USE NIOSH/MSHA APPROVED RESPIRATORS APPROVED FOR SILICA BEARING DUST WHEN FREE SILICA CONTAINING AIRBORNE BENTONITE DUST LEVELS EXCEED PEL/TLV'S.

Ventilation: MECHANICAL, GENERAL ROOM VENTILATION. USE LOCAL VENTILATION TO MAINTAIN PEL'S/TLV'S.

Protective Gloves: IMPERVIOUS GLOVES (FP N).

Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).

Other Protective Equipment: EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET ANSI DESIGN CRITERIA (FP N).

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health: SPEC GRAV:2.45-2.55 (H*20=1). PH:8-10 (5% AQUEOUS SUSPENSION). SOL IN H*20:FORMS COLLOIDAL SUSPENSION. EXPLAN OF CARCIN:1994:ANTICIPATED TO BE CARCINOGEN.

=====
Physical/Chemical Properties
=====

M.P/F.P Text: 2642F,1450C

Spec Gravity: SUPP DATA
PH: SUPDAT
Solubility in Water: INSOLUBLE, (SUPDAT)
Appearance and Odor: BLUEGRAY TO GREEN AS MOIST SOLID, LIGHT TAN TO GRAY
AS DRY POWDER; NO ODOR.

=====
Reactivity Data
=====

Stability Indicator: YES
Stability Condition To Avoid: NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: NONE.
Hazardous Decomposition Products: NONE.
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: NOT RELEVANT

=====
Toxicological Information
=====

=====
Ecological Information
=====

=====
MSDS Transport Information
=====

=====
Regulatory Information
=====

=====
Other Information
=====

=====
HAZCOM Label
=====

Product ID: ENVIROPLUG COARSE
Cage: 0JWA0
Company Name: WYO-BEN INC
PO Box: 1979
City: BILLINGS MO
Zipcode: 59103 US
Health Emergency Phone: 406-652-6351
Date Of Label Review: 02/16/1996
Label Date: 02/16/1996
Chronic Hazard IND: Y
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: WARNING
Respiratory Protection IND: YES
Health Hazard: Moderate
Contact Hazard: Moderate
Fire Hazard: None
Reactivity Hazard: None

=====
Hazard And Precautions: ACUTE:SKIN:POSSIBLE DRYING RESULTING IN
DERMATITIS. EYES:MECHANICAL IRRITANT. INHAL:SHORT TERM EXPOSURE TO DUST
LEVELS EXCEEDING PEL MAY CAUSE IRRITATION OF RESPIRATORY TRACT RESULTING
IN DRY COUGH. I NGESTION:NO ADVERSE EFFECTS. CHRONIC:CANCER HAZARD.
CONTAINS SILICA, CRYSTALLINE-QUARTZ WHICH IS LISTED AS AN ANIMAL LUNG
CARCINOGEN (FP N). INHALATION:LONG TERM EXPOSURE TO FREE SILICA
CONTAINING AIR BORNE BENTONITE DUST MAY LEAD TO SILICOSIS OR OTHER
RESPIRATORY PROBLEMS; DRY COUGH & LABORED BREATHING.

=====
Disclaimer (provided with this information by the compiling agencies):
=====

This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever expressly or implied warrants, states, or intends said information to have any application, use or viability by or to any person or persons outside the Department of Defense nor any person or persons contracting with any instrumentality of the United States of America and disclaims all liability for such use. Any person utilizing this instruction who is not a military or civilian employee of the United States of America should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation regardless of similarity to a corresponding Department of Defense or other government situation.



WYO-BEN, INC.

MATERIAL SAFETY DATA SHEET



NFPA FIRE HAZARD
IDENTIFICATION SYSTEM

I. PRODUCT IDENTIFICATION

Trade Name(s): ABANTONITE™	
Generic Name(s): Wyoming (Western) Bentonite; Bentonite Clay (CAS No. 1302-78-9) and other proprietary ingredients	
Chemical Name(s): Sodium Montmorillonite (CAS No. 1318-93-0) and other proprietary ingredients	
Manufacturer: WYO-BEN, INC.	Telephone Numbers:
Address: P.O. Box 1979 Billings, Montana 59103	Information: (406) 652-6351 EMERGENCY: (406) 652-6351

II. HAZARDOUS INGREDIENTS

Ingredient	CAS NO.	%	Hazard
Crystalline Silica (SiO ₂) as Quartz	14808-60-7	See Note	Low concentrations of crystalline silica (SiO ₂) in the form of quartz may be present in airborne bentonite dust. See Section VI for discussion of health hazard.

Note 1: The specific chemical identity of this product is being withheld as a trade secret. In the event of a medical emergency it will be provided to a treating medical professional under the provisions of 29 CFR 1910.1200(i).

Note 2: Although the typical quartz content of western bentonite is in the range of 2 to 6% most of the quartz particles are larger than the 10 μ respirable threshold size. The actual respirable quartz concentration in airborne bentonite dust will depend upon bentonite source, fineness of product, moisture content of product, local humidity and wind condition at point of use and other use specific factors.

III. PHYSICAL DATA

Boiling Point (°F): NA	Specific Gravity (H ₂ O=1): 2.45-2.55
Vapor Pressure (mm. Hg): NA	Melting Point: Approx. 1450°C
Vapor Density (Air = 1): NA	Evaporation Rate (Butyl Acetate = 1): NA
Solubility in Water: Insoluble, forms colloidal suspension.	pH: 8-10 (5% aqueous suspension)
Density (at 20° C): 55 lbs/cu.ft. as product.	
Appearance and Odor: Bluegray to green as moist solid, light tan to gray as dry powder. No odor.	

IV. FIRE AND EXPLOSION DATA

Flash Point: NA	Flammable Limits: LEL: NA UEL: NA
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: None. Product will not support combustion.	
Extinguishing Media: None for product. Any media can be used for the packaging. Product becomes slippery when wet.	

V. REACTIVITY

Stability: Stable
Hazardous Polymerization: None
Incompatibility: None
Hazardous Decomposition Products: None
NA = Not Applicable ND = Not Determined

Date Prepared: **March 15, 2004**Doc #: **4210-00**

VI. HEALTH HAZARD INFORMATION**Routes of Exposure and Effects:**

Skin: Possible drying resulting in dermatitis.

Eyes: Mechanical irritant.

Inhalation: *Acute* (short term) exposure to dust levels exceeding the PEL may cause irritation of respiratory tract resulting in a dry cough. *Chronic* (long term) exposure to airborne bentonite dust containing respirable size ($\leq 10 \mu$) quartz particles, where respirable quartz particle levels are higher than TLV's, may lead to development of silicosis or other respiratory problems. Persistent dry cough and labored breathing upon exertion may be symptomatic.

Ingestion: No adverse effects.

**Permissible Exposure Limits:
(for air contaminants)**

OSHA PEL
(8hr. TWA)

ACGIH TLV

Bentonite as "Particulates not otherwise regulated"
(formerly nuisance dust)

Total dust

15mg/m³

ND

Respirable dust

5mg/m³

ND

Crystalline Quartz (respirable)

0.1mg/m³

0.1mg/m³

Carcinogenicity: Bentonite is not listed by ACGIH, IARC, NTP or OSHA. IARC, 1997, concludes that there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica from occupational sources (IARC Class 1), that carcinogenicity was not detected in all industrial circumstances studied and that carcinogenicity may depend on characteristics of the crystalline silica or on external factors affecting its biological activity. NTP classifies respirable crystalline silica as "known to be a human carcinogen" (NTP 9th Report on Carcinogens - 2000). ACGIH classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

Acute Oral LD₅₀: ND

Acute Dermal LD₅₀: ND

Aquatic Toxicology LC₅₀: ND

Emergency and First Aid Procedures:

Skin: Wash with soap and water until clean.

Eyes: Flush with water until irritation ceases.

Inhalation: Move to area free from dust. If symptoms of irritation persist contact physician. Inhalation may aggravate existing respiratory illness.

VII. HANDLING AND USE PRECAUTIONS

Steps to be Taken if Material is Released or Spilled: Avoid breathing dust; wear respirator approved for silica bearing dust. Vacuum up to avoid generating airborne dust. Avoid using water. Product slippery when wetted.

Waste Disposal Methods: Product should be disposed of in accordance with applicable local, state and federal regulations.

Handling and Storage Precautions: Use NIOSH/MSHA respirators approved for silica bearing dust when free silica containing airborne bentonite dust levels exceed PEL/TLV's. Clean up spills promptly to avoid making dust. Storage area floors may become slippery if wetted.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation Requirements: Mechanical, general room ventilation. Use local ventilation to maintain PEL's/TLV's.

Respirator: Use respirators approved by NIOSH/MSHA for silica bearing dust.

Eye Protection: Generally not necessary. Personal preference.

Gloves: Generally not necessary. Personal preference.

Other Protective Clothing or Equipment: None

IX. SPECIAL PRECAUTIONS

Avoid prolonged inhalation of airborne dust.

DEPARTMENT OF TRANSPORTATION HAZARDOUS MATERIAL INFORMATION

Shipping Name: NA (Not Regulated)

Hazard Class: NA

Hazardous Substance: NA

Caution Labeling: NA

Date Prepared: March 15, 2004

Doc #: 4210-00

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.

ALCOMER 120L

I. GENERAL INFORMATION

Chemical Name: Partially Hydrolized Polyacrylamide CAS#: 25083-02-03
Chemical Family: Sodium Acrylate & Acrylamide
Chemical Formula: Proprietary
Synonyms: ASP 700, ID-Bond, New Drill

NFPA Properties: Health: 0 Flammability: 1 Reactivity: 0 Contact:

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	TWAPPM	TLV's (ACGIH)		STEL MG/M ³	CAS#	OTHER LIMITS	%
		TWA MG/M ³	STEL PPM				
1.							

III. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point °F: 460	Color: Off-white
Specific Gravity: 0.95-1.09	Odor: Sweet Hydrocarbon
Vapor Pressure: N/A	Appearance: Liquid
Percent Volatility: 1.3 @ 75°F	pH:
Vapor Density: N/A	Viscosity: 1673 CST @ 60°F
Evaporation Rate: <1	Activity: 33-35 Wt%:
Melting Point °F: N/A	LC50: NDA
Solubility in water: Disperses	LD50: NDA

IV. FIRE & EXPLOSION HAZARD DATA

Extinguishing Agents: Drychemical or waterspray or waterfog or CO2 or foam or sand & earth
Flash Point : 200
Flammable Limits: N/A LEL: N/A UEL: N/A
Special Firefighting Procedures: Firefighters must be equipped to prevent breathing of vapors or products of combustion. Wear an approved self-contained breathing apparatus and protective clothing.
Unusual Fire & Explosion Hazards:

V. HEALTH HAZARD DATA

Routes of Entry: Inhalation: yes Skin: yes Ingestion: yes

Effects of Overexposure: May cause irritation to skin and eyes

Toxicological Properties: NDA

Chronic & Acute Effects of Overexposure:

Carcinogenicity: NTP: No IARC Monographs: No OSHA Regulated:

Emergency First Aid Procedures

Eyes: Immediately flush with large quantities of water for at least 15 minutes and call a physician.

Skin Contact: Flush with large amounts of water for 15 minutes.

Inhalation: Remove to fresh air, if breathing is difficult, give oxygen and call a physician

Ingestion: Call a physician.

VI. REACTIVITY DATA

Stability: Stable

Hazardous Polymerization: Will not occur

Hazardous Decomposition Products: As with any organic material, combustion will produce carbon dioxide (CO₂) and probably carbon monoxide (CO). Oxides of nitrogen

Conditions To Avoid:

Incompatibility and Materials to Avoid: Strong oxidizers such as hydrogen peroxide, bromine and chromic acid, liquid chlorine, enriched gaseous or liquid oxygen, sodium or calcium hypochlorite

VII. SPILL & DISPOSAL PROCEDURES

Steps To Be Taken in Case Material is Released or Spilled --- Absorb with an inert material such as sand, soil or vermiculite and sweep up. Containers may contain residual product. Do not reuse containers unless properly reconditioned.

Waste Disposal Method: Dispose of in accordance with federal, state and local regulations

Precautions To Be Taken In Handling & Storage: Store between 40°-120°F.

VIII. PROTECTIVE EQUIPMENT

Ventilation Type Required: Mechanical

Protective Gloves: Rubber or plastic, solvent resistant

Eye Protection: Chemical safety goggles or dust mask

Other Protective Equipment: Neoprene type apron

Respiratory protection: Use NIOSH/OSHA approved respirator with organic vapor cartridge if vapor concentration exceeds permissible exposure limit.

Comments:

IX. REGULATORY & TRANSPORTATION INFORMATION

US DOT Proper Shipping Name: "Oil-Well Treating Compound"

US DOT Hazard Class:

DOT ID Number: 2074

ID Number:

Freight Classification:

Unregulated By DOT:

Regulated by DOT:

Special Transportation Note:

Labels Required:

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, expressed or implied, and we assume no responsibility for any damage or expense.



MATERIAL SAFETY DATA SHEET

Section 1 - IDENTIFICATION

Product Name: Portland Cements

CAS Reg. No.: 65997-15-1

Chemical Name and Synonyms: Portland Cement, Cement, Hydraulic Cement

Trade Names: Portland Cement – Types I, IA, II, III, IIIA; SAYLOR'S® Portland Types: I, IA, II, III; PRONTO®, Flamingo Brixment® White Portland Cement

MSDS Information: This MSDS supersedes prior MSDS's for the products noted above. This MSDS covers a number of products with similar applications and occupational exposure hazards. Specific constituents and methods of preparation for these products will vary. The term "Portland Cement", used in the text of this MSDS, refers to the above named products collectively.

Chemical Family: Calcium silicate compounds; calcium compounds containing iron and aluminum; and gypsum are the primary constituents of these products.

Informational Phone Numbers:
(800) 437-7762 Customer Service - Nazareth, PA
(800) 336-0366 Customer Service - Speed, IN
(800) 624-8986 Customer Service - Martinsburg, WV
(800) 386-2111 Customer Service - Mississauga, ONT

Emergency Contact Information: (800)-424-9300 Chemtrec

MSDS Prepared by: Essroc MSDS Development Committee - (610) 837-6725 – April 2006

Section 2 - COMPONENTS

Hazardous Ingredients:

Component	CAS No.	OSHA PEL (8-hour TWA)	ACGIH TLV	Other Information
Portland Cement	65997-15-1	15 mg total dust/m ³ 5 mg respirable dust/m ³	10 mg/m ³	IDLH: 5000 mg/m ³ LD ₅₀ : No Data
Gypsum	13397-24-5	15 mg total dust/m ³ 5 mg respirable dust/m ³	10 mg/m ³	IDLH: Not Determined LD ₅₀ : No Data
Limestone	1317-65-3	15 mg total dust/m ³ 5 mg respirable dust/m ³	10 mg/m ³	IDLH: Not Determined LD ₅₀ : No Data
Crystalline Silica (< 0.3%)	14808-60-7	For mineral dusts containing crystalline silica: (10 mg respirable dust/m ³)/(%SiO ₂ +2) (30 mg total dust/m ³)/(%SiO ₂ + 2)	0.025 mg/m ³	IDLH: 50 mg/m ³ (twa) LD ₅₀ : ipr rat LD Lo 400 mg/kg
Notes:				

Trace Elements: Portland cement is made from materials mined from the earth and processed using energy provided by fuels. Trace amounts of naturally occurring, potentially harmful chemicals might be detected during chemical analysis. Trace constituents may include calcium oxide (also known as free lime or quick lime), free magnesium oxide, potassium and sodium sulfate compounds, chromium compounds, and nickel compounds.

Section 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Portland Cement is a powder that poses little immediate hazard. A single short-term exposure to the dry powder is not likely to cause serious harm. However, exposure of sufficient duration to wet Portland Cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns. The same type of tissue destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry Portland Cement.

POTENTIAL HEALTH EFFECTS

Relevant Routes of Exposure: Eye contact, skin contact, inhalation and ingestion.

Effects resulting from eye contact: Exposure to airborne dust may cause immediate or delayed irritation or inflammation.

Eye contact by larger amounts of dry powder or splashes of wet Portland Cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see Section 4) and medical attention to prevent significant damage to the eye.

Effects resulting from skin contact: Discomfort or pain cannot be relied upon to alert a person to hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet Portland Cement. Exposed persons may not feel discomfort until hours after the exposure has ended and significant injury has occurred.

Exposure to dry Portland Cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry Portland Cement contacting wet skin or exposure to moist or wet Portland Cement may cause more severe skin effects including thickening, cracking, or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of (caustic) chemical burns.

Some individuals may exhibit an allergic response upon exposure to Portland Cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may first experience this effect after years of contact with Portland Cement products.

Effects resulting from inhalation: Portland Cement may contain free crystalline silica. Prolonged exposure to airborne free crystalline silica may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (also see "Carcinogenic potential" below.)

Inhalation may also aggravate other lung conditions. Exposure to Portland Cement may cause irritation to the moist mucous membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.

Effects resulting from ingestion: Although ingestion of small quantities of Portland Cement is not known to be harmful, ill effects are possible especially if larger quantities are consumed. Portland Cement should not be eaten.

Carcinogenic potential: Portland Cement is not listed as a carcinogen by the National Toxicology Program (NTP), International Agency for Research (IARC) or the Occupational Safety and Health Administration (OSHA). It may, however, contain trace amounts of substances listed as carcinogens by these organizations.

Portland Cement may contain crystalline silica. Crystalline silica is classified by the IARC as a known human carcinogen. Some human studies indicate potential for lung cancer from crystalline silica exposure. Risk depends on duration and level of exposure.

Medical conditions which may be aggravated by inhalation or dermal exposure:

Pre-existing upper respiratory and lung diseases.

Unusual (hyper) sensitivity to hexavalent chromium (chromium⁺⁶) salts.

Section 4 - FIRST AID

Eyes: Immediate flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes including under lids, to remove all particles. Call physician immediately.

Skin: Wash skin with cool water and pH-neutral soap or a mild detergent intended for use on skin. Seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement.

Inhalation of Airborne Dust: Remove to fresh air. Seek medical help if coughing and other symptoms do not subside. ("Inhalation" of gross amounts of Portland Cement requires immediate medical attention.)

Ingestion: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

Section 5 - FIRE AND EXPLOSION DATA

Portland Cement is not combustible.

Flash Point:	Not applicable	Upper Explosive Limit:	Not applicable
Auto ignition temperature:	Not applicable	Lower Explosive Limit:	Not applicable
Auto ignition temperature:	Not applicable	Extinguishing media:	Not applicable
Hazardous combustion products:	Not applicable	Unusual fire and explosion hazards:	None
Special fire fighting procedures:	Portland Cement poses no fire-related hazards. Self-contained breathing apparatus is recommended to limit exposure to combustion products when fighting any fire.		

Section 6 - ACCIDENTAL RELEASE MEASURES

Collect dry material using a scoop. Avoid actions that cause dust to become airborne. Avoid inhalation of dust and contact with skin. Wear appropriate personal protective equipment as described in Section 8.

Scrape up wet material and place in appropriate container. Allow the material to "dry" before disposal. Do not attempt to wash Portland Cement down drains.

Dispose of waste material according to local, state, and federal regulations.

Section 7 - HANDLING AND STORAGE

Keep Portland Cement dry until used. Normal temperatures and pressures do not affect the material. Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse. Wash thoroughly after exposure to dust or wet cement mixtures or fluids.

Section 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Skin protection: Prevention is essential to avoid potentially severe skin injury. Avoid contact with unhardened (wet) Portland Cement products. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened Portland Cement products might occur, wear impervious clothing and gloves to eliminate skin contact. Where required, wear boots that are impervious to water to eliminate foot and ankle exposure.

Do not rely on barrier creams. Barrier creams should not be used in place of gloves.

Periodically wash areas contacted by dry Portland Cement or by wet cement or fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet cement, it should be removed and replaced with clean dry clothing.

Respiratory protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation.

Ventilation: Use local exhaust or general dilution ventilation to control exposure within applicable limits.

Eye protection: When engaged in activities where cement dust or wet cement could contact the eye, wear safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with Portland Cement or fresh cement products.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grey, white powder	Odor:	No distinct odor
Physical state:	Solid (powder)	pH (in water):	12 to 13
Solubility in water:	Slightly soluble (0.1 to 1.0%)	Vapor pressure:	Not applicable
Vapor density:	Not applicable	Boiling point:	Not applicable (>1000° C)
Melting point:	Not applicable	Specific gravity (H ₂ O=1.0):	2.80 - 3.00
Evaporation Rate:	Not applicable	Coefficient of oil to water distribution:	Not applicable

Section 10 - STABILITY AND REACTIVITY

Stability: Stable

Conditions to avoid: Unintentional contact with water.

Incompatibility: Wet Portland Cement is alkaline. As such it is incompatible with acids, ammonium salts and aluminum metal.

Hazardous decomposition: Will not spontaneously occur. Adding water results in hydration and produces (caustic) calcium hydroxide.

Hazardous polymerization: Will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

- Route of Entry.....Section 3
- Effects of acute exposure to product.....Section 3
- Effects of chronic exposure to product.....Section 3
- Exposure Limits.....Section 2
- Irritancy of product.....Section 3
- Sensitization to productSection 3
- Carcinogenicity.....Section 3
- Reproductive Toxicity.....Not Applicable
- Teratogenicity.....Not Applicable
- Mutagenicity.....Not Applicable
- Toxicologically synergistic products.....Section 3, Section 16

For a description of available, more detailed toxicological information, call one of the informational phone numbers listed at the end of Section 1.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity: No recognized unusual toxicity to plants or animals.

Relevant physical and chemical properties: See sections 9 and 10.

Section 13 - DISPOSAL

Dispose of waste material according to local, state, and federal regulations. (Since Portland Cement is stable, uncontaminated material may be saved for future use.)

Dispose of bags in an approved landfill or incinerator.

Section 14 - TRANSPORTATION DATA

Hazardous materials description/proper shipping name: Portland Cement is not hazardous under U.S. Department of Transportation (DOT) regulations.

Hazard class: Not applicable.

Identification number: Not applicable

Required label text: Not applicable.

Hazardous substances/reportable quantities (RQ): Not applicable

Section 15 - OTHER REGULATORY INFORMATION

Status under USDOL-OSHA & MSHA Hazard Communication Standards (29CFR 1910.1200 & 30CFR Part 47): Portland Cement is considered a "hazardous chemical" under these regulations, and should be part of any hazard communication program.

Status under CERCLA/Superfund, 40 CFR 117 and 302: Not Listed

Hazard Category under SARA TITLE III, Sections 311- 312: Portland Cement qualifies as a "hazardous substance" with delayed health effects.

Status under SARA Title III, Section 313: This product contains NONE of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 in concentrations above deminimis levels.

Toxic Substance Control Act (TSCA): Some substances in Portland Cement are on the TSCA inventory list.

Status under the Federal Hazardous Substances Act: Portland Cement is a "hazardous substance" subject to statutes promulgated under the subject act.

Status under Canadian Environmental Protection Act: Not listed.

Status under WHMIS: Portland Cement is considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations (Class D2A – Materials causing other toxic effects and Class E - Corrosive material) and is therefore subject to the labeling and MSDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

SECTION 16 - OTHER INFORMATION

Abbreviations:

ACGIH	American Conference of Government Industrial Hygienists
ASTM	American Society of Testing Materials
CAS	Chemical Abstract Service
CFR	Code of Federal Regulations
DOT	Department of Transportation
IARC	International Agency for Research
IDLH	Immediately dangerous to live and health (NIOSH).
m ³	cubic meter
mg	Milligram
mm	millimeter
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicity Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RQ	Reportable Quantities
SARA	Superfund Amendments and Reauthorization Act
TLV	Threshold Limit Value
TWA	Time Weighted Average
URT	Upper Respiratory Tract
WHMIS	Workplace Hazardous Material Information System

Other important information:

Portland Cement should only be used by knowledgeable persons. A key to using the product safely requires the user to recognize that Portland Cement chemically reacts with water, and that some of the intermediate products of this reaction (that is, those present while Portland Cement is "setting") pose a far more severe hazard than does Portland Cement itself.

While the information provided in this material safety data sheet is believed to provide a useful summary of the hazards of Portland Cement as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

In particular, the data furnished in this sheet do not address hazards that may be posed by other materials mixed with Portland Cement to produce Portland Cement products. Users should review other relevant material safety data sheets before working with this Portland Cement or working on Portland Cement products, for example, Portland Cement concrete.

SELLER MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY ESSROC CEMENT CORP., except that the product shall conform to contracted specifications. The information provided herein was believed by Essroc Cement Corp. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach or warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

SECTION 3 PHYSICAL DATA

BOILING POINT (°F) Not Applicable	SPECIFIC GRAVITY (H ₂ O = 1) 2.6
VAPOR PRESSURE (mm Hg) Not Applicable	VAPOR DENSITY (AIR = 1) Not Applicable
EVAPORATION RATE Not Applicable	SOLUBILITY IN WATER Negligible
APPEARANCE AND ODOR Yellow, Blue, Brown granules or powder. Earthy odor.	DENSITY @ 20° C: UNCOMPACTED: 68 lbs/cubic foot

HAZARDOUS MATERIALS IDENTIFICATION**DEGREE OF HAZARD**

 1 Health Hazard
 0 Flammability
 0 Reactivity

4 = EXTREME
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

SECTION 4 FIRE AND EXPLOSION DATA

FLASH POINT
Not Applicable

FLAMMABLE LIMITS
Non Flammable

SECTION 5 HEALTH HAZARD DATA

CARCINOGENICITY - SEE ROUTES OF EXPOSURE AND EFFECTS (BELOW)

ACUTE ORAL LD ₅₀	ACUTE DERMAL LD ₅₀	AQUATIC TOXICITY (LC ₅₀)
ND	ND	10,000 mg/l

Inhalation: Breathing prolonged and excessive amounts of Bentonite dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may have the following serious chronic health effects:

Pneumoconiosis: Excessive inhalation of respirable dust may cause pneumoconiosis, a respiratory disease, which can result in delayed, progressive, disabling and sometimes fatal lung injury. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with pneumoconiosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1 - carcinogenic to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (published in June 1997) in conjunction with the use of these materials. The National Toxicology Program classifies respirable crystalline silica as "known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

Other Data with Possible Relevance to Human Health:

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by fibrosis of the lungs, skin and other internal organs) and kidney disease.

For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine Volume 155, pages 761-768, 1997.

SKIN Potential irritant.	EYE Potential irritant.	INHALATION Irritation to lungs, nose, and throat.
EMERGENCY FIRST AID PROCEDURES		
EYES: Flush with water.	SKIN: Wash with soap and water.	
If inhaled and effects occur, move to fresh air. If breathing is irregular, administer oxygen		

SECTION 6 REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY Stable	INCOMPATIBILITY None
HAZARDOUS DECOMPOSITION PRODUCTS None	HAZARDOUS POLYMERIZATION Will not occur.

SECTION 7 SPILL OR LEAK PROCEDURES**STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED**

If uncontaminated, sweep up or collect, and reuse product. Product becomes slippery when wet.

WASTE DISPOSAL METHOD

Dispose of in accordance with all Federal, State and Local regulations.

NEUTRALIZING CHEMICALS

Not Applicable

SECTION 8 SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION**

Use NIOSH approved mechanical filter respirator for nontoxic dusts if dust concentration exceeds 10mg/m³

VENTILATION

Sufficient to keep dust levels below the TLV for crystalline silica.

PROTECTIVE GLOVES

General duty work gloves.

EYE PROTECTION

If high dust conditions exist, tight fitting goggles are recommended.

OTHER PROTECTIVE EQUIPMENT

Eyewash

SECTION 9 SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store out of the weather. Product becomes slippery when wet. Avoid contact water in walk areas.

OTHER PRECAUTIONS

PROPER SHIPPING NAME	PLACARDS	HAZARD CLASS
Not Regulated	None	Not Hazardous
REPORTABLE QUANTITY	HAZARDOUS SUBSTANCE	ID NUMBER
None	None	None
LABEL		
None Required		

SECTION 10 REGULATORY INFORMATION

SARA requires the submission of annual reports of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS that are copied and distributed for this material. Components present in this product at a level which could require reporting under the statute are:

Chemical: CAS #:
NONE

Toxic Substances Control Act (TSCA)
The ingredients of this product are on the TSCA inventory.

SECTION 11 STATE RIGHT TO KNOW

Quartz is a Canadian WHMIS (Workplace Hazardous Material Information System) Ingredient Disclosure List, Massachusetts Substance List, New Jersey Right to Know Hazardous Substance List, and Pennsylvania Hazardous Substance List.

PREPARED BY: BLACK HILLS BENTONITE, LLC.

DATE: FEBRUARY, 2001

[BACK](#)

MATERIAL SAFETY DATA SHEET**Product Trade Name:** EZ-MUD®**Revision Date:** 16-Feb-2004**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product Trade Name:** EZ-MUD®
Synonyms: None
Chemical Family: Blend
Application: Shale Inhibitor**Manufacturer/Supplier** Baroid Drilling Fluids
a Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (800) 666-9260 or (713) 676-3000**Prepared By** Chemical Compliance
Telephone: 1-580-251-4335**2. COMPOSITION/INFORMATION ON INGREDIENTS**

SUBSTANCE	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Hydrotreated light petroleum distillate	64742-47-8	10 - 30%	Not applicable	Not applicable

3. HAZARDS IDENTIFICATION**Hazard Overview** May cause eye, skin, and respiratory irritation. May cause headache, dizziness, and other central nervous system effects. May be harmful if swallowed.**4. FIRST AID MEASURES****Inhalation** If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.
Skin Wash with soap and water. Get medical attention if irritation persists. Remove contaminated shoes and discard.
Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Ingestion Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.
Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	> 200
Flash Point/Range (C):	Min: > 200
Flash Point Method:	Not Determined
Autoignition Temperature (F):	Min: > 93
Autoignition Temperature (C):	PMCC
Flammability Limits in Air - Lower (%):	> 392
Flammability Limits in Air - Upper (%):	> 200
	Not Determined
	Not Determined

Fire Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Special Exposure Hazards	Decomposition in fire may produce toxic gases. Use water spray to cool fire exposed surfaces.
Special Protective Equipment for Fire-Fighters	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.
NFPA Ratings:	Health 2, Flammability 1, Reactivity 0
HMS Ratings:	Flammability 1, Reactivity 0, Health 2

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment.
Environmental Precautionary Measures	Prevent from entering sewers, waterways, or low areas.
Procedure for Cleaning / Absorption	Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.
Storage Information	Store away from oxidizers. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.
Respiratory Protection	Organic vapor respirator with a dust/mist filter. In high concentrations, supplied air respirator or a self-contained breathing apparatus.
Hand Protection	Impervious rubber gloves.
Skin Protection	Rubber apron.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	White to gray
Odor:	Mild hydrocarbon
pH:	6-8

Specific Gravity @ 20 C (Water=1):	1.0
Density @ 20 C (lbs./gallon):	8.3
Bulk Density @ 20 C (lbs/ft3):	Not Determined
Boiling Point/Range (F):	347
Boiling Point/Range (C):	175
Freezing Point/Range (F):	Not Determined
Freezing Point/Range (C):	Not Determined
Vapor Pressure @ 20 C (mmHg):	0.002
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	~ 70
Evaporation Rate (Butyl Acetate=1):	< 1
Solubility in Water (g/100ml):	Partially soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	Keep away from heat, sparks and flame.
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Ammonia. Oxides of nitrogen. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	May cause respiratory irritation. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.
Skin Contact	May cause skin irritation.
Eye Contact	May cause severe eye irritation.
Ingestion	Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal. May cause central nervous system depression including headache, dizziness, drowsiness, muscular weakness, incoordination, slowed reaction time, fatigue blurred vision, slurred speech, giddiness, tremors and convulsions.
Aggravated Medical Conditions	Lung disorders.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	BOD(28 Day): 40% of COD
Bio-accumulation	Not Determined

Ecotoxicological Information

Acute Fish Toxicity:	TLM96: >1000 mg/l (Pimephales promelas)
Acute Crustaceans Toxicity:	TLM48: 98 mg/l (Acartia tonsa)
Acute Algae Toxicity:	EC50: 16.70 mg/l (Skeletonema costatum)

Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging	If empty container retains product residues, all label precautions must be observed. Store away from ignition sources. Transport with all closures in place. Return for reuse or disposal according to national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

DOT
Not restricted

Canadian TDG
Not restricted

ADR Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG

Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION**US Regulations****US TSCA Inventory** All components listed on inventory.**EPA SARA Title III Extremely Hazardous Substances** Not applicable**EPA SARA (311,312) Hazard Class** Acute Health Hazard**EPA SARA (313) Chemicals** This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).**EPA CERCLA/Superfund Reportable Spill Quantity For This Product** Not applicable.**EPA RCRA Hazardous Waste Classification** If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.**California Proposition 65** All components listed do not apply to the California Proposition 65 Regulation.**MA Right-to-Know Law** Does not apply.**NJ Right-to-Know Law** Does not apply.**PA Right-to-Know Law** Does not apply.**Canadian Regulations****Canadian DSL Inventory** All components listed on inventory.**WHMIS Hazard Class** D2B Toxic Materials**16. OTHER INFORMATION****The following sections have been revised since the last issue of this MSDS**

Not applicable

Additional Information For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

Material Safety Data Sheet



Bentonite -

C.A.S. Number: 1302-78-9 / MSDS C.A.S. Code: 0100

A BRENNTAG Company

SECTION I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT/MATERIAL: BENTONITE

MANUFACTURER/DISTRIBUTOR: WHITTAKER, CLARK & DANIELS, INC.
ADDRESS: 1000 COOLIDGE STREET
 SOUTH PLAINFIELD, N.J. 07080

TELEPHONE: (908) 561-6100

SECTION II - COMPOSITION, INFORMATION ON INGREDIENTS:

CHEMICAL NAME: BENTONITE
CAS NUMBER: 1302-78-9

HAZARDOUS INGREDIENTS: CRYSTALLINE SILICA (QUARTZ, 14808-60-7) IS PRESENT AT LESS THAN 1.0% AS A NATURALLY OCCURRING COMPONENT NOT REMOVED FROM THE CLAY ORE DURING PROCESSING. SEE SECTION 11 FOR FURTHER INFORMATION.

SECTION III - HAZARDS IDENTIFICATION:

HMIS RATING: HEALTH 1 (POSSIBLE HAZARD FROM CHRONIC EXPOSURE TO DUST, SEE SECTION 11)
 FLAMMABILITY 0
 REACTIVITY 0
 PERSONAL PROTECTION E

EMERGENCY OVERVIEW: UNDER NORMAL USAGE OR CONTAINED SPILLS THIS MATERIAL DOES NOT POSE A SIGNIFICANT EMERGENCY RISK. THIS MATERIAL IS VERY SLIPPERY WHEN WETTED WITH WATER. APPROPRIATE PRECAUTIONS SHOULD BE TAKEN TO AVOID SLIPS AND FALLS.

POTENTIAL HEALTH EFFECTS:

EYES: MAY CAUSE SLIGHT EYE IRRITATION. DIRECT CONTACT SHOULD BE AVOIDED TO PREVENT PHYSICAL ABRASION.

Information presented herein is believed to be accurate and reliable but is not intended to meet any specification and does not imply any guarantee or warranty by Whittaker, Clark and Daniels, Inc. (WCD). For more information and assistance, contact Technical Services at 1-800-732-0562.

•Whittaker, Clark and Daniels, Inc. • 1000 Coolidge St. • South Plainfield, NJ 07080•



Material Safety Data

SKIN: NONE KNOWN.
INHALATION: SHORT TERM EXPOSURE TO HIGH DUST LEVELS COULD CAUSE MINOR IRRITATION. LONG TERM EXPOSURE TO HIGH CONCENTRATIONS OF DUST SHOULD BE AVOIDED DUE TO THE PRESENCE OF QUARTZ WHICH CAN CAUSE SEVERE AND PERMANENT LUNG DAMAGE WHEN INHALED. CONTROL DUST LEVELS WITH ENGINEERING CONTROLS (LOCAL EXHAUST VENTILATION). PREVENT DUST INHALATION WITH USE OF A NIOSH APPROVED DUST RESPIRATOR IF ENGINEERING CONTROLS ARE INADEQUATE.
CARCINOGENICITY: IARC HAS CLASSIFIED CRYSTALLINE SILICA AS A HUMAN CARCINOGEN, CLASS 1.
TARGET ORGAN: LUNGS

SECTION IV - EMERGENCY AND FIRST AID MEASURES:

SKIN: WASH OFF WITH SOAP AND WATER.
EYE: FLUSH WITH TEPID WATER FOR 15 MINUTES. IF IRRITATION OR PAIN PERSISTS, SEEK MEDICAL ATTENTION.
INHALATION: REMOVE PERSON TO FRESH AIR. SEEK MEDICAL ATTENTION IF SHORTNESS OF BREATH OR IRRITATION PERSISTS.
INGESTION: COULD RESULT IN INTESTINAL BLOCKAGE. IF LARGE AMOUNTS ARE SWALLOWED SEEK MEDICAL ATTENTION.
NOTES TO PHYSICIAN: MIXTURE IS ORALLY NON-TOXIC. SEE SECTION 11 FOR ADDITIONAL TOXICOLOGICAL DATA.

SECTION V - FIRE FIGHTING MEASURES:

FLASHPOINT: NOT APPLICABLE
UPPER EXPLOSIVE LIMIT: NOT APPLICABLE
LOWER EXPLOSIVE LIMIT: NOT APPLICABLE
AUTOIGNITION TEMPERATURE: NOT APPLICABLE
THIN-FILM IGNITION TEMPERATURE: NOT APPLICABLE
HAZARDOUS COMBUSTION PRODUCTS: NONE
BASIC FIRE FIGHTING GUIDANCE: USE APPROPRIATE MEASURES FOR SURROUNDING FIRE.
EXTINGUISHING MEDIA: NOT APPLICABLE

SECTION VI - ACCIDENTAL RELEASE MEASURES:

WET DOWN LARGE SPILLS WITH WATER MIST TO AVOID GENERATING EXCESSIVE DUST LEVELS. CAUTION: THIS MATERIAL IS VERY SLIPPERY WHEN WET. APPROPRIATE PRECAUTIONS SHOULD BE TAKEN TO AVOID SLIPS AND FALLS.

CLEAN-UP PROCEDURES AND EQUIPMENT: USE OF A DUSTLESS VACUUM SYSTEM OR SHOVELING. FLUSHING WITH WATER IS ALSO AN ACCEPTABLE METHOD. AVOID DRY SWEEPING OR OTHER METHODS THAT MAY GENERATE HIGH DUST CONCENTRATIONS. WEAR NIOSH APPROVED DUST RESPIRATOR.

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SECTION VII - HANDLING AND STORAGE:

HANDLING: ADEQUATE VENTILATION IS NECESSARY IN HANDLING AREAS TO PREVENT EXCESSIVE AIRBORNE DUST.

STORAGE: STORE IN CLOSED CONTAINERS IN A DRY AREA.

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION:

ENGINEERING CONTROLS: PROVIDE GENERAL OR LOCAL VENTILATION ADEQUATE TO MAINTAIN AIRBORNE LEVELS BELOW OCCUPATIONAL EXPOSURE LIMITS.

PERSONAL PROTECTION EQUIPMENT:

EYE/FACE: USE SAFETY GLASSES OR GOGGLES.

SKIN: NONE

RESPIRATORY: USE A NIOSH APPROVED, AIR PURIFYING DUST RESPIRATOR IF DUST LEVELS ARE ABOVE EXPOSURE LIMITS. HALF-MASKS ARE USUALLY SUFFICIENT FOR NORMAL USE.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: TAN POWDER
ODOR: MILD
PHYSICAL STATE: SOLID
pH: NOT APPLICABLE
VAPOR PRESSURE: NOT APPLICABLE
VAPOR DENSITY: NOT APPLICABLE
BOILING POINT: NOT APPLICABLE
MELTING POINT: NOT APPLICABLE
SOLUBILITY: NEGLIGIBLE
SPECIFIC GRAVITY: 2.6

SECTION X - STABILITY AND REACTIVITY:

INCOMPATIBILITIES: NONE
CONDITIONS TO AVOID: NOT APPLICABLE

STABILITY: THIS MATERIAL IS STABLE UNDER NORMAL STORAGE AND HANDLING CONDITIONS.

HAZARDOUS POLYMERIZATION: NOT APPLICABLE

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SECTION XI -TOXICOLOGICAL INFORMATION:

THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER HAS DETERMINED THAT OVER-EXPOSURE TO CRYSTALLINE SILICA CAN CAUSE LUNG CANCER AND SILICOSIS, A PROGRESSIVE LUNG DISEASE IN HUMANS. HEALTH EFFECTS FROM EXPOSURE TO CRYSTALLINE SILICA OCCUR ONLY WHEN IT IS INHALED.

INHALATION EFFECTS: CRYSTALLINE SILICA HAS BEEN SHOWN TO CAUSE SILICOSIS AND LUNG CANCER. CRYSTALLINE SILICA ONLY CAUSES THESE CONDITIONS WHEN INHALED.

SKIN CONTACT: PROLONGED SKIN CONTACT MAY LEAD TO DRYING OR CRACKING OF THE SKIN DUE TO THE ABSORPTION OF MOISTURE.

EYE CONTACT: AS WITH ANY DUST, WILL BE IRRITATING TO THE EYES DUE TO PHYSICAL ABRASION.

MEDICAL CONDITIONS AGGREGATED: RESPIRATORY DISORDERS.

OCCUPATIONAL EXPOSURE LIMITS: STUDIES HAVE SHOWN THAT THE CRYSTALLINE SILICA IS EVENLY DISTRIBUTED THROUGHOUT ALL PARTICLE SIZES OF THIS PRODUCT. KEEP DUST LEVELS BELOW PERMISSIBLE LIMITS.

ACGIH TWA:	0.1 mg/cu.m. (as quartz)
ACGIH STEL:	N.A.
OSHA PEL (respirable):	10 mg/cu-m- / % SiO ₂ + 2
OSHA PEL (total dust):	30 mg/cu.m. / % SiO ₂ + 2

SECTION XII - ECOLOGICAL INFORMATION:

ECOTOXICOLOGICAL INFORMATION: NONE KNOWN

SECTION XIII - DISPOSAL CONSIDERATIONS:

DISPOSE OF IN A MANNER IN ACCORDANCE WITH LOCAL AND FEDERAL REGULATIONS. THIS INFORMATION APPLIES TO MATERIAL AS MANUFACTURED; CONTAMINATION OR PROCESSING MAY CHANGE WASTE CHARACTERISTICS AND REQUIREMENTS.

SECTION XIV - TRANSPORTATION INFORMATION:

THIS MATERIAL IS NOT REGULATED BY THE DEPARTMENT OF TRANSPORTATION.

SECTION XV - REGULATORY INFORMATION:

SARA 313:	NONE KNOWN
TSCA :	LISTED
EUROPEAN INVENTORY:	LISTED
CANADIAN DSL:	EXEMPT
AUSTRALIAN AICS:	LISTED
JAPANESE ENCS:	ENCS 9 1971

CALIFORNIA PROPOSITION 65: CRYSTALLINE SILICA IN AIRBORNE PARTICLES OF RESPIRABLE SIZE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

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EUROPE: QUARTZ EXPOSURE LIMITS.

BELGIUM:	0.1 mg/cu.m. TWA
DENMARK:	0.1 mg/cu.m. TWA
SWEDEN:	0.1 mg/cu.m. TWA
U.K. :	0.1 mg/cu.m. (respirable)
	0.3 mg/cu.m. (total dust)
RUSSIA:	14.0 mg/cu.m. (STEL)
THAILAND:	10.0 mg/cu.m. (respirable)
	30.0 mg/cu.m. (total dust)
FINLAND:	0.2 mg/cu.m. TWA
GERMANY:	0.2 mg/cu.m. TWA
SWITZERLAND:	0.15 mg/cu.m. TWA

NOTE: DIFFERENT COUNTRIES APPLY QUARTZ OCCUPATIONAL EXPOSURE LIMITS IN DIFFERENT MANNERS, DEPENDING ON HOW THEY DEFINE "RESPIRABLE" FRACTION, AND MASS PERCENTAGE OF A TOTAL MIXTURE; CONSULT LOCAL AUTHORITIES FOR APPLICATION.

SECTION XVI - OTHER INFORMATION:

"Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Whittaker, Clark & Daniels, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Whittaker, Clark & Daniels, Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information.

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Issued: 4/98

Supercedes: 1/97

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**MATERIAL SAFETY DATA SHEET
CPD SUPERPLUG**

SECTION 1 - PRODUCT INFORMATION

Manufacturer: CPD Construction Products
219 Connie Crescent # 13
Concord, Ontario L4K 1L4

1. PRODUCT INFORMATION

Product Identifier: CPD Superplug (fast setting hydraulic cement)

Application and Use: Water plug and fast setting patching compound.

Product Description: Blend of Hydraulic Cements and Silica Aggregate.

Regulatory Classification:

WHMIS - Class E (Corrosive)

Class D Division 2 Subdivision A (Quartz)

Transportation of Dangerous Goods - Not regulated under current TDG Legislation.

EMERGENCY NUMBERS

Business (905) 669-5013

24 Hours (416) 425-3846

SECTION 2 - HAZARDOUS INGREDIENTS

The following component data is defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act.

NAME	(pbw)%	CAS
Sand ** (Quartz)	30-60	14808-60-7
Portland Cement (Hydraulic Cement)	30-60	65997-15-1

Sand - LD50 - Not available - LC50 - Not available

Portland Cement - LD50 - Not available LC50 - Not available

** The sand used in this product contains crystalline silica (quartz). The quartz that exists as dust particles with an aerodynamic diameter less than 5 microns is hazardous. An approved dust mask (for crystalline silica) should be worn by workers handling this product in a dry state.

SECTION 3 - PHYSICAL DATA

Physical State: Powder (Granular Solid)

Specific Gravity: 2.20

Vapour Pressure: Not applicable

Solubility in Water: <3%

PH (Aqueous Solution): 12.5

Boiling Point: Not applicable

Viscosity: Not applicable

Vapour Density (AIR=1): Not applicable

Evaporation Rate: Not applicable

% Volatile: None

Odour: None

Appearance: Dark Grey Powder containing fine silica sand.

SECTION 4 - TOXICOLOGICAL PROPERTIES

NATURE OF HAZARD

INHALATION: Crystalline Silica (Quartz) dust particles below 5 microns in diameter may be present in this product. Excessive inhalation of particles of this size (or smaller) may cause lung disease (Silicosis). The prolonged inhalation of dust may result in irritation of nasal tissue and the cornea (white) of the eye. Certain people may develop allergic dermatitis.

EYE CONTACT: May cause irritation to eye tissue on contact. Extreme exposure could lead to severe irritation if not immediately treated.

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SKIN CONTACT: Will dry skin and cause defatting dermatitis. A latent period may exist between exposure and sense of irritation.

INGESTION: May cause burns. Irritation of mucous membranes of mouth, throat, esophagus and stomach will result from ingestion.

CHRONIC: Excessive exposure (Inhalation) could lead to development of the irreversible lung disease "Silicosis". Crystalline silica is classified by IARC as "2A - probably Carcinogenic to Humans". Also chronic local exposure may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, chronic inhalation may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness.

OCCUPATIONAL EXPOSURE LIMIT: Maximum TWA of silica is 0.2 mg/M3 of air. For further information of the designated substance "Silica" contact the Ministry of Labour (Occupational Health and Safety Division) in your region.

SECTION 5 - FIRST AID MEASURES

INHALATION: Remove to fresh air. If irritation of the respiratory tract is experienced seek medical attention.

EYE CONTACT: Flush eye "immediately" with water for at least 15 minutes holding eyelids open. If irritation persists seek medical attention.

SKIN CONTACT: Immediately wash with plenty of water for at least 15 minutes. Seek medical attention if rash results from contact.

INGESTION: Do not induce vomiting!! Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek immediate Medical attention!

SECTION 6 - PREVENTIVE MEASURES

PERSONAL PROTECTION: Minimum safety equipment should consist of safety glasses with side shields, neoprene or PVC full length waterproof gloves and coveralls. An approved dust mask for crystalline silica dust should also be worn when large quantities of this product are being used. Observe good personal hygiene. No engineering controls required under normal conditions of application.

HANDLING, STORAGE AND SHIPPING: Replace container lid tightly when not using. DO NOT ALLOW product to get wet as it will harden. No temperature restrictions for storage. Shelf life is approximately 2 years in unopened original container.

SPILL CONTROL AND DISPOSAL: Sweep area with dust retarding floor sweeping compound. Dispose of as normal garbage. No special precautions required.

SECTION 7 - FIRE AND EXPLOSION DATA

None. This product will not burn.

SECTION 8 - REACTIVITY DATA

Stable. Hazardous decomposition will not occur.

SECTION 9 - PREPARATION

Prepared By: R.J. Green
Plant Manager
CPD Construction Products
Concord, Ontario L4K 1L4

ATTACHMENT 2

CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

**CONSTRUCTION SITE
BEST MANAGEMENT PRACTICES**

SPILL PREVENTION AND CONTROL

GM-6

- Keep waste storage areas clean, well organized, and well equipped.
- Information on proper storage, clean up and spill reports should be posted at a visible and accessible location at all times.
- Educate employees and subcontractors about what a “significant” and “insignificant” spill is for each chemical used on-site and train in spill prevention and cleanup.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Locate chemical storage and handling areas away from storm drains, waterways, or reservoirs.
- Do not store chemicals in areas where they may be susceptible to rain.
- Provide a secondary containment structure in case of leaks or spills.
- Always use a secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent material under paving equipment when not in use.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal.
- Store cracked batteries in a non-leaking secondary container.
- If vehicles will be fueled on site:
 - Discourage “topping off”.
 - Use designated areas located away from waterways and drainages.
 - Use a secondary containment to catch drips or spills.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Clean up spills immediately and dispose of contaminated soils and clean up materials properly.
 - Sweep up dry spills. Do not wash or hose down the area.
 - Wet spills on impermeable surfaces should be absorbed.
 - Wet spills on soils require digging up and disposing of the contaminated soil.

SPILL PREVENTION AND CONTROL

GM-6

- A secondary containment with enough capacity to contain a spill is required for fueling areas.
- Report significant spills to local and state agencies, such as the Fire Department or NDEP, who may assist in the cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).
- Only a reputable, licensed company should be used to clean up large spills and dispose of contaminated materials.

Inspection and Maintenance:

- On a weekly basis, ensure that an adequate supply of spill control cleanup materials are located close to storage, fueling, and unloading areas.
- Inspect containment structures in fueling and storage areas.
- Spill prevention plans should be updated when the types of chemicals stored on site changes.
- Regularly inspect on-site vehicles and equipment for leaks, and repair them immediately.

VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING

GM-8

- When a vehicle is located over a water body (dock, barge) and is planned to be idle for more than one hour, a drip pan or sheet should be placed under the vehicle.
- Fueling areas should be:
 - Located at least 100 feet from waterways, channels and storm drains.
 - Protected from run-on or runoff.
 - Located on a level-graded area.
 - Attended at all times during fueling.
- Fueling equipment should be equipped with an automatic shut-off nozzle to contain drips.
- Fuel tanks should not be “topped-off”.
- Avoid mobile fueling.
- Observe federal, state, and local requirements relating to any stationary aboveground storage tanks.
- Do not dump fuels and lubricants on the ground.
- Do not bury used tires.
- Do not dispose of oil in a dumpster or pour it down the storm drain.
- Properly dispose of used batteries.
- Conduct washing, fueling, and major maintenance offsite whenever possible.
- Inspect vehicles for leaky hoses, gaskets, or other problems.
- Locate vehicle services areas away from waterways, storm drains, gutters, and curbs.
- Use berms, sandbags, or other barriers to contain areas.
- Do not use detergents, solvents, degreasers, or other chemical products to do on-site cleaning.
- Use a drip pan or drip cloth if fluids will be drained and replaced on-site.
- Collect all used fluids, store in separate labeled containers, and either recycle or dispose of properly.

VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING

GM-8

Inspection and Maintenance:

- Inspect on all containment structures.
- Maintain waste fluid containers in a leak proof condition.
- Service sumps associated with wash areas regularly.
- Inspect daily for leaks on vehicles and equipment.
- Keep an ample supply of spill cleanup materials available onsite.
- Clean up spills immediately and dispose of waste properly.
- Prevent boil-overs by regularly cleaning equipment radiators.

MATERIAL DELIVERY, HANDLING, STORAGE AND USE

GM-10

Standards and Specifications:

- Designate a storage area that is not near a storm drain or watercourse.
- All contractors and subcontractors must train employees in proper materials handling, storage, application and delivery procedures.
- Follow manufacturers' instructions on application, storage and disposal of materials.
- Store onsite only the amount of material necessary for the job.
- Use non-hazardous and environmentally friendly products.
- Provide indoor storage or cover stockpiled materials and wastes with a tarp.
- Provide covered storage for secondary containment of hazardous materials.
- Use secondary storage to prevent soil contamination.
- Monitor employees and subcontractors to ensure that proper practices are being implemented.
- Keep all material in original containers.
- Label all stored materials according to state, local and federal regulations.
- Do not store incompatible materials together.
- Keep adequate supply of cleanup materials on site at all times.
- Report all spills.
- Do not apply hazardous chemicals during wet or windy conditions.

Inspection and Maintenance:

- Inspect storage areas weekly to ensure neatness.
- Post proper storage instructions and Material Safety Data Sheets (MSDS) for all currently stored materials.
- Repair and replace damaged secondary containment facilities.
- Remove all empty containers and packaging from site.
- Store materials with adequate clearances for access and emergency response.

LIQUID WASTE MANAGEMENT

GM-13

Standards and Specifications:

- Protect drainage ways with earth dikes, filter fabric, sand bags etc. to divert or capture run off from operations. Gather and dispose of trapped material properly.
- Educate workers on how to identify a non-hazardous from a hazardous liquid waste.
- Educate workers that it is unacceptable to have any liquid waste enter storm drains, gutters or watercourses and drainage channels. Incorporate in safety meetings.
- Store and contain wastes in pits or portable tanks that are large enough to completely contain wastes. Locate where accidental discharge will not follow to storm drains, gutters, watercourses and drainage channels.
- If necessary, treat wastes by filtrations, sedimentation or chemical neutralization before disposal.

Inspection and Maintenance:

- Monitor employees and subcontractors to ensure that proper practices are being implemented
- Remove deposited solids from containment areas and capturing devices. Dispose of offsite according to all local, state and federal regulations.
- Inspect containment areas and capturing devices for damages and leaks. Repair or replace as needed.

HAZARDOUS WASTE MANAGEMENT

GM-17

- Contractor is required to follow all federal, state and local laws regarding handling, storing, and transporting waste materials.

Standards and Specifications:

- Contact Washoe County Environmental Health (775) 328-2436 regarding local hazardous waste management policies and procedures.
- Waste containers shall be constructed of a suitable material and properly labeled according to regulations. Labels must include type of material, time of collection and site location.
- Temporary containment for stored materials should be sized at 1.5 times the volume of the stored material. Materials must be stored in sealed drums.
- Temporary containment areas shall be free of accumulated stormwater and spills.
- Temporary containment areas shall have room between containers for emergency response and cleanup.
- Incompatible materials shall be stored separately.
- Do not store different materials in the same container.
- Do not locate temporary containment areas near storm drains, gutters, watercourses or drainage channels.
- Provide adequate access to temporary containment areas.
- Store containers on pallets under a covered, protected area unless containers are water tight.
- Do not dispose of liquid waste in dumpsters or other solid waste containers.
- Collect water from decontamination procedures, treat it and dispose of it at an appropriate disposal site.
- Educate employees and subcontractors in waste storage and disposal. Ensure that proper procedures are followed.
- Train employees in newest procedures for handling materials. Update when new information is available.
- Immediately repair all dikes and liners used for storage or containment.
- Recycle materials if appropriate.

HAZARDOUS WASTE MANAGEMENT

GM-17

Inspection and Maintenance:

- Ensure that all wastes are properly labeled and stored.
- Verify that all hazardous wastes are disposed of properly.
- Hazardous wastes must be collected, labeled and disposed of at authorized disposal sites.
- Keep supplies on site for cleanup of spills.
- Post MSDS sheets for all materials stored on site.
- Immediately repair all dikes and liners used for storage or containment.