ACCEPTANCE REVIEW MEMO (ARM)

Licensee: Piedmont Engineering Inc. **License No.:** 25-27563-01

Docket No.: 030-34456 **Mail Control No.:** 471385

Type of Action: Renewal **Date of Requested Action:** 05-31-07

Reviewer Assigned: **ARM reviewer(s):** Cook

Response	Deficiencies Noted During Acceptance Review
	[X] Open ended possession limits. Limit possession. Submit inventory. [ ] Submit copies of most recent leak test results. [ ] Add - delete IC license condition. Add IC paragraph in cover letter. [ ] Split license from cover letter. Add SUNSI marking to license. [ ] Ask the licensee if they have any type-amount of EPAct Material.

Reviewer's Initials: _____ **Date:** _____

☐Yes ☐No Unrestricted release Group 2 or >: Transfer memo to FCDB within 10 days.

☐Yes ☐No Decommissioning notification should be completed within 30 days.

☐Yes ☐No Termination request < 90 days from date of expiration

☐Yes ☐No Expedite (medical emergency, no RSO, location of use/storage not on license, RAM in possession not on license, other)

☐Yes ☐No TAR needed to complete action.

Branch Chief's and/or Sr. HP's Initials: _____ **Date:** _____

SUNSI Screening according to RIS 2005-31

☐Yes ☑No **Non-Publicly Available, Sensitive** if <u>any</u> item below is checked

General guidance:

_____RAM = or > than Category 3 (Table 1, RIS 2005-31), use Unity Rule
_____Exact location of RAM (whether = or > than Category 3 or not)
_____Design of structure and/or equipment (site specific)
_____Information on nearby facilities
_____Detailed design drawings and/or performance information
_____Emergency planning and/or fire protection systems

Specific guidance for medical, industrial and academic (above Category 3):

_____RAM quantities and inventory
_____Manufacturer's name and model number of sealed sources & devices
_____Site drawings with exact location of RAM, description of facility
_____RAM security program information (locks, alarms, etc.)
_____Emergency Plan specifics (routes to/from RAM, response to security events)
_____Vulnerability/security assessment/accident-safety analysis/risk assess
_____Mailing lists related to security response

Branch Chief's and/or Sr. HP's Initials: _____ **Date:** 6/8/07

Pre-Licensing Screening

Applicant Information: **Control No.** 471385

Name: Piedmont Engineering Inc.	Type of Request: Renewal Program Code(s):
Location: MT	License No.: 25-27563-01 Docket No.: 030-34456

STEP 1–Radioactive Materials and Quantities Requested:

		Yes or No
Instructions for Step 1: **Complete Step 1 for all applications**. If all your responses in Step 1 are "No" then do not complete Step 2 (Screening Criteria). Sign and date the completed step-sheet and add it as the sensitive and non-publicly available OAR in ADAMS. If a "yes" response is indicated for any item in Step 1, also complete Step 2. If the type of use is subject to a Security Order or the requirements for increased controls, complete Step 3 (Item A or Item B) without delay.		
A.	The request is from a new applicant.	N
B.	NUREG-1556, Volume 20, Section 4.9 indicates a licensing site visit is needed for the requested type of use, e.g., (1) Type A broad scope license, (2) panoramic irradiator containing > 10000 curies, (3) manufacturers or distributors using unsealed radioactive material or significant quantities of sealed material, (4) radioactive waste brokers, (5) radioactive waste incinerators, (6) commercial nuclear laundries, and (7) any other application that in the judgement of the reviewer and cognizant supervisor involves complex technical issues, complex safety questions, or unprecedented issues that warrant a site visit.	N
C.	The applicant requested certain radionuclides and quantities that equal or exceed the Risk Significant Quantity (TBq) values in the table, below, that have been **"highlighted"** by the reviewer	N

Table of Risk Significant Quantities

(Category 2 Quantities, IAEA Safety Guide No. RS-G-1.9, Categorization of Radioactive Sources, August 2005)

Radionuclide	Risk Significant Quantity (TBq[1])	Risk Significant Quantity (Ci[1])	Radionuclide	Risk Significant Quantity (TBq[1])	Risk Significant Quantity (Ci[1])
Am-241	0.6	16	Pm-147	400	11,000
Am-241/Be	0.6	16	Pu-238	0.6	16
Cf-252	0.2	5.4	Pu-239/Be	0.6	16
Cm-244	0.5	14	Ra-226[2]	0.4	11
Co-60	0.3	8.1	Se-75	2	54
Cs-137	1	27	Sr-90 (Y-90)	10	270
Gd-153	10	270	Tm-170	200	5,400
Ir-192	0.8	22	Yb-169	3	81

[1] The primary values are TBq. The curie (Ci) values are for informational purposes only.

[2] The Atomic Energy Act, as amended by the Energy Policy Act of 2005, authorizes NRC to regulate Ra-226 and NRC is in the process of amending its regulations for discrete sources of Ra-226.

	Yes , No, or Not Applicable (NA)
Calculations of the Total Activity or the Unity Rule are attached to document whether or not the screening criteria in Step 2 were also completed to evaluate the application. **NOTE–If an amendment of an existing license is being requested, the calculations will include the previously authorized quantities for the radionuclide(s).**	
Total Activity–multiple activities are requested for a single radionuclide and the sum of the activities equals or exceeds the quantity of concern for the radionuclide	
Unity Rule--multiple radionuclides are requested and the sum of the ratios equals or exceeds unity, e.g.,[(total activity for radionuclide A) ÷ (risk significant quantity for radionuclide A)] + [(total activity for radionuclide B) ÷ (risk significant quantity for radionuclide B)] ≥ 1.0.	

Signature and Date for Step 1:

Jacqueline A. Cook 6/8/07

License Reviewer and Date

NRC FORM 313 (4-2004) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0120 EXPIRES: 10/31/2005

APPLICATION FOR MATERIAL LICENSE

Estimated burden per response to comply with this mandatory collection request: 7 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, MISSISSIPPI, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

RECEIVED
MAY 01 2007
DNMS

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S.NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER
- [x] C. RENEWAL OF LICENSE NUMBER 25-27563-01

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

PIEDMONT ENGINEERING, INC
1215 APPLE'S WAY
BELGRADE, MT 59714

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

1215 Apple's Way
Belgrade, MT 59714

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

PATRICK L. REDMOND

TELEPHONE NUMBER

406-388-8578

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE. see attached for

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT. 5 through 11 to be sent under separate cover

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*

FEE CATEGORY | AMOUNT ENCLOSED $

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER – TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
	Patrick L. Redmond	5/31/07

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		Mn 471385
APPROVED BY				DATE	

NRC FORM 313 (4-2004) PRINTED ON RECYCLED PAPER

Patrick Redmond, PE

SENIOR
GEOTECHNICAL/CIVIL
ENGINEER

Mr. Redmond has over 24 years (starting in 1982) of experience in geotechnical and water resource engineering on projects throughout the continental United States and Alaska. Patrick is currently licensed as a registered professional engineer in Montana, Idaho, Oregon, Wyoming, California, Nevada, Illinois, Indiana, Ohio, Maryland, Pennsylvania, New Jersey and North Dakota. His geotechnical experience includes 100's of geotechnical projects throughout the western United States. He has also provided design engineering services for the construction of fluvial, and wetland systems since 1994 on projects in Montana and throughout the continental United States. Patrick's experience includes all phases of water resource and geotechnical engineering including exploration, laboratory testing, project design and management, plan and bid document preparation, and construction QA/QC for sites throughout the country. His relevant project experience has included numerous large or unique projects. Patrick's fluvial and wetland experience includes project management, site exploration, hydraulic and geomorphic design, permit preparation, public meetings, plan and bid document preparation, and construction QA/QC.

Selected Project Experience

Milltown Dam Removal, MT. Responsible for overseeing all geotechnical engineering aspects of the project through a subcontract with EMC^2 Consulting, the design engineers for the project. This complex project involves removal of thick sediment deposits upstream of the dam, investigation of cofferdams, flood and berm construction, grade controls, and slope stability evaluations along a major interstate. Geotechnical issues are being investigated by drilling activities, logging of boreholes, laboratory strength, permeability and consolidation testing of soil materials, and conducting engineering analysis to determine the stability of a slopes undergoing extensive surface modifications including realignment of a major river.

Mill Creek Borrow Investigation, Anaconda, MT. Responsible for overseeing all drilling activities, logging of boreholes, laboratory testing of soil material, and conducting engineering analysis to determine the stability of a slope undergoing extensive borrow and which supports a large repository for mine waste. The project required extensive drilling by methods unique to the site to obtain quality samples for laboratory analysis of high plasticity clays.

Anaconda Ponds Tailings Dam, Anaconda, MT. Mr. Redmond was the principal geotechnical engineer responsible for overseeing all drilling, exploration, laboratory testing, engineering analysis and stability determinations for the Anaconda Ponds Tailings Dam located within the Anaconda Smelter NPL Site near Anaconda, Montana. Approximately 17,000 lineal feet of tailings embankment was investigated for this analysis.

East Knob Landslide, Anaconda, MT. Mr. Redmond was the principal geotechnical engineer responsible for overseeing, all drilling, exploration, and laboratory testing for a large landslide induced by borrow area excavations. Project required extensive core drilling of bedrock, extensive geotechnical laboratory testing, and interpretation of geologic data in difficult terrain.

EXPERTISE

Geotechnical Exploration, Drilling, Testing, Analysis, and Design

Fluvial and Wetland Systems Design, Construction, Restoration, and Reclamation

Streambank Stabilization, Restoration, and Hydraulic Design

Slope Stability Exploration, Evaluation, and Stabilization

PROFESSIONAL AFFILIATIONS and REGISTRATIONS

National Society of Professional Engineers

American Society of Civil Engineers

Association of Engineering Geologists

Member American Geophysical Union

Registered Professional Engineer in 12 states.

EDUCATION

MS, Geotechnical Engineering
Colorado State University, 1994

BS, Geology
Montana State University, 1982

BS, Civil Engineering
Montana State University, 1982

Southern Cross, Philipsburg, MT. Principal geotechnical engineer responsible for all explorations, testing, and stability analyses for remediation of the Southern Cross Mine tailings pond located on steep slopes near Philipsburg, Montana.

Bostiwck Properties Site Investigation, Big Sky, MT. Provided geotechnical drilling, site evaluations, geotechnical assessments and analyses in advance of potential development on a large ancient landslide. This included drilling numerous deep geotechnical borings, geotechnical sampling and analyses of the landslide mass to determine the potential for reactivation of the slide during an earthquake event.

Deer Creek Landslide Remediation, Ashland, Wisconsin. Provided geotechnical drilling, sampling, laboratory analyses, and engineering services for remediation of a large landslide in highly plastic clay soils. The landslide was threatening to block a major stream located adjacent to a state highway. Slope stability analyses were conducted to determine methods of stabilization on both sides of the stream since both the road embankment and the existing landslide were affected.

Patrick Redmond: Other Significant Projects

Opportunity Ponds, Anaconda, MT. Mr. Redmond was the principal geotechnical engineer responsible for overseeing all drilling, exploration, laboratory testing, engineering analysis and stability determinations for the Opportunity Ponds Tailings Dams located within the Anaconda Smelter NPL Site near Anaconda, Montana. Approximately 17,000 linear feet of tailings embankment was investigated for this analysis. Additional work was performed in 2006 to evaluate the stability of additional slopes around non-tailings filled cells when used for settlement ponds.

Douglas Creek Abandoned Mine Restoration Project Phillipsburg, MT. Assisted Pioneer Technical services with design and preparation of construction drawings and technical specifications for Douglas Creek Abandoned Mine Restoration Project. Also provided geotechnical recommendations for tailings removal, and waste repository construction. Design required reconstruction of a steep mountain stream after removal of contaminated material from the valley bottom. Design integrated natural stream and fish passage concepts, repository cap drainage concerns, and risk analysis and protection of repository from flood events. Cap considerations required analysis of very loose hydraulically placed soils.

Old Works/East Anaconda Development Area Superfund Site, Anaconda, MT. Mr. Redmond assisted with the preparation of the feasibility study and remedy selection report for the Old Works/East Anaconda Development Area of the Smelter Hill NPL site in Anaconda, Montana. Tasks included engineering analyses, bid document and technical specification preparation, preparation of construction drawings, and construction quality assurance. A portion of the project involved design and construction of a Jack Nicklaus signature golf course over mine wastes.

Bozeman Solvent Site, Bozeman, Montana. Groundwater contamination resulting from spills of tetrachloroethylene into aquifers beneath the city required extensive geotechnical laboratory testing to evaluate transport mechanisms. Mr. Redmond provided geotechnical services and laboratory testing to Nicklin Earth and Water, Inc. to aid in their understanding of the hydrogeologic setting to assist in their modeling efforts.

Silver Lake Waterline , Butte, MT. Provided geotechnical and soils report to Pioneer Technical Services for the Silver Lake 54-inch diameter waterline alignment near Anaconda, Montana. This included exploratory efforts as well as preparation of the geotechnical report for the 54-inch waterline, which supplies much of the municipal water for Butte, Montana.

Advanced Silicon Materials Facility , Rocker, MT. Provided geotechnical explorations and prepared geotechnical recommendations and report for approximately 3 miles of paved access road for the Advanced Silicon Materials Facility near Butte, Montana. Assisted with road design and provided pavement cross-section recommendations.

Warm Springs Ponds CERCLA Site, MT. Mr. Redmond assisted with the design, geotechnical analysis, and construction quality assurance for the reconstruction of the Warm Springs Ponds CERCLA site. This project included assuring stability and flood routing of floods up to the one-half PMF through and around a series of three large treatment lakes. Mr. Redmond was responsible for the design, field testing, and construction of over 130,000 cubic yards of soil-cement placement as well as much of the laboratory and

field testing of the embankments for three high hazard dams. This project won the Grand Award from the American Consulting Engineers Council.

Richmond Hill Mine, SD. Provided construction quality assurance for the completion of over 2 million square feet of double and single lined waste facilities at the Richmond Hill Mine in an environmentally sensitive area of the Black Hills.

Rain, North Area Leach, and Barrick Goldstrike Projects, NV. Provided geotechnical investigations and construction quality assurance for construction of HDPE lined heap leach pads for the Rain, North Area Leach, and Barrick Goldstrike Projects near Carlin, Nevada. All were large heap leach gold mines with lined heap leach pads and other lined storage facilities to store pregnant and barren leach fluids for gold removal.

North Crow Dam, Wyoming, and Porter Draw Dam, Wyoming and Montana. Mr. Redmond assisted with the analysis and site geotechnical investigations and characterization of the North Crow Dam in southeastern Wyoming, and the Porter Draw Dam in southwestern Montana.

Homer Main Street Reconstruction Homer, Alaska. Managed a Branch office of JML Laboratories, Inc. in Homer, Alaska that provided laboratory testing and quality assurance for among other projects, 2.2 miles of four-lane highway construction through downtown Homer. Performed soil, asphalt, and concrete testing, as well as construction supervision for the Alaska DOT.

St. Paul Island Wind Farm St. Paul Island, Alaska. Provided exploration effort and foundation recommendations for wind turbine electrical generators located in a remote area of the Pribilof Islands in the Bering Sea between the United States and Russia.

Geotechnical Investigation, Siskiyou National Forest, Oregon. Performed a feasibility study for stabilization of five large landslides in the Siskiyou National Forest, in southwestern Oregon which were contributing sediment to a tributary and salmon spawning reach of the Rogue River.

Big Sky Development Geotechnical Site Assessment, Big Sky, Montana. Performed a second party geotechnical evaluation of a large tract of land on which development is proposed in the Big Sky Ski Resort in southwestern Montana. Large prehistoric landslides that required careful consideration substantially cover the area.

General Geotechnical Investigations, USA. Provided geotechnical investigations on an estimated 70 projects located throughout the western USA in the period of 2000 to 2006. These projects consisted mostly of foundation investigations, pier placements, landslide investigations, and general site investigations. Many of these also included either wetland, stream, or groundwater issues.

Gerard Project, Big Sky, MT. Provided geotechnical field evaluations, laboratory testing, mitigation recommendations, and construction oversite for the removal of steeply dipping bentonite seams uncovered during the construction of a large concrete reinforced parking garage. Since no foundation investigation was performed prior to construction the project required round the clock testing and design to minimize construction delays. Expansive clay seams required partial removal, installation of geofoam beneath the foundation, and redesign of the floor slab. Site soils exhibited substantial swell potential due to their low in-place moisture condition.

Helena High School and Capital High School Additions , Helena, MT. Performed the geotechnical explorations and provided foundation recommendations for new additions to Capital High School and Helena High School in Helena, Montana. Helena High foundations required careful consideration of expansive soils located under the proposed addition. Foundations were carried to permanently wet soils located at depth to prevent volume change due to projected seasonal moisture variations in the soil.

Beaverhead Ranch Project, Dillon, MT. Provided geotechnical investigations and design recommendations for the construction of a multi-million dollar home placed on a prehistoric slump and debris flow. The project required drilling using ODEX sampling techniques, triaxial and consolidation testing, groundwater and drainage evaluations for a perched water table, and stability analyses in an earthquake prone region of Montana.

Anaconda Regional Water, Waste and Soils, Storm water Runoff Plan, Anaconda, Montana. Conducted an in depth conceptual design and cost estimate of a storm water runoff plan for the Smelter Hill watersheds, for the Atlantic Richfield Company in Anaconda, Montana. The plan included generating hydrology for a complex watershed, routing the water through a system of existing and designed culverts, detention basins and ditches, passing the water safely through municipal infrastructure, and discharging the metal latent water into a predetermined settling basin.

Blackfoot River Ranch, Ovando, Montana. Provided foundation recommendations for a large new home constructed on a bluff overlooking the Blackfoot River near Ovando, Montana. Glacial till and outwash deposits in addition to erosion caused by the river lead to the formation of a large rotational slide on the property where the home was initially proposed. Siting of the new location considered evaluation of geomorphic slope stability associated with the Blackfoot River to safeguard the final home location.

Burke Home Site, Anaconda, MT. Provided the geotechnical explorations and design recommendations for the Burke home site in mountainous terrain, with expansive soils, located south of Georgetown Lake, Montana.

Wilsall Community Church, Wilsall, Montana. Provided the geotechnical investigation, laboratory testing, and geotechnical design services for the construction of a new masonry and rock church in an area with marginally collapsable soils. Required thorough laboratory testing to ensure that collapse of the affected soils did not occur due to poor drainage management.

Roddy Residence,Big Sky, Montana. Provided geotechnical site evaluation and prepared a report detailing geotechnical concerns in an area of Big Sky subject to local instability due to the presence of a regional syncline and low strength bentonitic soils. The home was eventually located on ridge of outcropping sandstone.

Red Rock Ranch, Hebgen Lake, Montana. Provided geotechnical investigations and recommendations for a large water tank placed on a mountain slope in a seismically active area of Montana.

Danhoff Property, Bozeman, Montana. Investigated the potential for expansive soils beneath a constructed foundation in shale deposits located east of Bozeman, Montana. Required evaluation of existing concrete walls and floors as well as consolidation and swell testing of site soils to determine whether expansive soils contributed to footing walls that were not level.

Marsh Laboratory,Montana State University, Bozeman, Montana. Provided geotechnical exploratory efforts and foundation recommendations for a new laboratory at the Marsh Laboratory on the Montana State University Campus.

Other Pre 2000 Projects Involving Geotechnical Site Exploration, Investigation, or Design

- *Lot 171 Yellowstone Club Geotechnical and Groundwater Investigation, Big Sky, Montana.*
- *Lemond Property Geotechnical Drilling, Big Sky, Montana.*
- *Montana Guest Ranch Resort Preliminary Geologic/Geotechnical Evaluation, Gallatin Gateway, Montana.*
- *Avis Ranch Property Geotechnical Investigation, Clyde Park, Montana.*
- *Huffman Property Landslide Investigation, Livingston, Montana*
- *Hyalite Creek Subdivision Preliminary Geologic/Geotechnical Evaluation, Belgrade, Montana.*
- *Lot 194 Yellowstone Club Geotechnical Investigation, Big Sky, Montana.*
- *Basin Creek Dam Performance Inspection Evaluation, Butte, Montana*
- *Weather Hill Geotechnical Drilling and Laboratory Testing, Anaconda, Montana.*

- *Fantelli Property Geotechnical Site Investigations and Foundation Analyses, Gallatin Gateway, Montana*
- *Double Drake Ranch Subdivision Preliminary Geologic and Geotechnical Site Evaluation, Whitehall, Montana*
- *Crail Creek Property Geotechnical Site Evaluation, Big Sky, Montana*
- *DeFrancesco Property Site Geotechnical Investigation, Trail Creek, Montana*
- *Northern Energy Propane Tank Geotechnical Investigation, Bozeman, Montana*
- *Weissman Property Site Geotechnical Investigation, Pray, Montana*
- *McDonough Hotel Geotechnical Testing, HKM Corporation*
- *Rocky Mountain Professional Center Geotechnical Drilling*
- *Whitetail Ranch Wetland Geotechnical Investigation and Laboratory Testing, Big Timber, Montana*
- *Louisiana Pacific Site Geotechnical Investigation for new Scale Installation, Belgrade, Montana*
- *High Ore Creek Abandoned Mine Reclamation Project Geotechnical and Hydraulic Design Assistance, Boulder, Montana*
- *San Juan River Ranch Dam and Pond Seepage Preliminary Evaluation, Pagosa Springs, Colorado*
- *Skunk Creek Property Geotechnical Investigation, Clyde Park, Montana*
- *Tobin Property Geotechnical Investigation, Bridger Canyon, Montana*
- *Warm Springs Creek Geotechnical Drilling, Clancy, Montana*
- *Park Mine Reclamation Project Geotechnical and Hydraulic Design Assistance, Townsend, Montana*
- *Miscellaneous projects throughout Alaska.* Field geotechnical engineer for an estimated 30 local and remote geotechnical investigations and construction projects throughout coastal and interior Alaska. Directed exploratory drilling, provided quality assurance testing for soils, concrete, and asphalt in both laboratory and field settings, and construction quality assurance. Prepared geotechnical reports, laboratory testing included triaxial and long-term creep testing of permafrost in climate controlled environments. Projects included numerous large commercial buildings and schools along with geotechnical investigations associated with tract development.
- *Miscellaneous Laboratory Testing, Montana, Idaho, Nevada, Kentucky.* Providing laboratory testing for mine tailings from numerous mines throughout the United States on an on-going basis.

Publications

Redmond, P.L. and Shackelford, C.D., "Design and Evaluation of a Flow Pump System for Column Testing", ASTM Geotechnical Testing Journal, GTJODJ, Vol. 17, No. 3, September 1994.

Shackelford, C.D. and Redmond, P.L., "Solute Breakthrough Curves for Processed Kaolin at Low Flow Rates", Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 121, No. 1, January 1995

Selected to sit on the technical panel for the Tuolumne River Adaptive Management Forum, California, 2001 Sedimentation Engineering Design in River Restoration: Construction-Phase Activities. Short Course. 1999 ASCE International Water Resources Engineering Conference. Aug. 1999. Seattle, WA.

Additional Education

40 - Hour OSHA Training in compliance with 29 CFR 1910.120

Radiation Safety and Use of Nuclear Gauges

Grade I Concrete Technician (ACI certified)

ITEMS 5 THORUGH 11

Item 5

a. Cesium 137 and Americium 241
b. Sealed sources registered either with NRC under 10 CFR 32.210 or with an Agreement State and incorporated in a compatible gauging device.
c. The maximum that will be possessed at any one time will be:

Model	Element	Source	Maximum Amount For any Single Source
For CPN MC series moisture/density gauges			
(1)CPN Model MC-3	Cesium 137 Americium 241/Be	CPN Model 131 Sealed source	less than 10 millicuries less than 50 millicuries
(1)CPN Model MC-3	Cesium 137 Americium 241/Be	CPN Model 131 Sealed source	less than 10 millicuries less than 50 millicuries
For Troxler Electronic Laboratories series moisture/density gauges			
(1)Troxler Model 3400 series	Cesium 137 Americium 241/Be	Sealed source	less than 10 millicuries less than 50 millicuries

Item 6

The sealed radioactive sources will be contained within either Campbell Pacific Nuclear (CPN) MC series or Troxler Electronic Laboratories Model 3400 series moisture-density gauges and will be used to measure soil and asphalt density and moisture content for control of soils on earthwork construction projects. The gauges will be used out of our offices at 1215 Apple's Way in Belgrade, Montana. It is our intent to use the portable gauges at temporary job sites with the jurisdiction of the NRC. Your office will be contacted prior to using these gauges in any state other than Montana. If using the gauges in any state which is not under the jurisdiction of the NRC the appropriate officials with the state in question will be contacted to obtain reciprocity or to satisfy the requirements of the specific state.

Item 7

Patrick L. Redmond is the designated radiation safety officer and his training certificate is attached. Mr. Redmond has acted as the RSO since this license was first granted in 1997 and is the owner of Piedmont Engineering, Inc. He was previously also the RSO for ESA Consultants of Bozeman, Montana and Fort Collins, Colorado (no longer in business).

1215 APPLE'S WAY
BELGRADE, MONTANA 59714
email: piedengineering@qwest.net
PHONE: (406) 388-8578
FAX: (406) 388-8579

He has worked extensively with gauges while employed previously by J.M. Lambe and Associates of Anchorage, Alaska, Vector Engineering of Nevada City, California, and Welsh Engineering, of Sparks, Nevada. The status of these businesses is not known. Mr. Redmonds resume is enclosed. Mr. Redmond and Ms. Audra Marks are the only authorized users of the nuclear gauge at Piedmont Engineering, Inc. Certificates of training are enclosed for both Mr. Redmond, and Ms. Marks.

Item 8

Before an individual will be permitted to use a gauge, the user will have successfully completed a safety course provided by an authorized instructor. All users will receive copies of, and be trained in accordance with the Radiation Safety Plan concerning our operating and emergency procedures. A copy of the Radioactive materials license and the radiation safety plan will accompany the gauge at all times. All users will be designated as an authorized user by the RSO. Piedmont Engineering will retain certificates of course completion from authorized training classes for inspection in our permanent records.

Item 9

The location of the permanent storage facility is 1215 Apple's Way located west of Belgrade, Montana as shown on the enclosed site plan. The gauge is stored in the laboratory portion of our firm in a steel locking box. The locking steel box is in an interior room of our laboratory. The gauge will be chained and locked into the steel storage case when not in use. No permanent work space is located within 10 feet of the gauge storage area. The area within 10 feet of the gauge receives sporadic use throughout the day but no desks are located in this area. The laboratory is secured by locks and signage is located on the door to the storage area. There are no windows in this room and the room is locked whenever the laboratory and office are vacant.

While at work sites the gauge will be under constant supervision. It will be chained and locked in the vehicle while not in use. The gauge will be covered to prevent its being an attractive nuisance. If used on a remote site the gauge will be locked in the hotel room to prevent theft. Alternately a theft proof storage area will be established at the job site inside a lockable office if permanent office facilities are available. In almost all cases the gauge will be returned to our laboratory at night. The details of temporary storage would be sent to the NRC or appropriate state authorities prior to establishment of the proposed temporary storage area.

Item 10

The radiation safety plan for Piedmont Engineering, Inc. is enclosed.

Item 11

The gauge(s) will only be returned to the manufacturer, an authorized disposal facility, or transferred to an authorized licensee only.

1215 APPLE'S WAY
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PIEDMONT ENGINEERING, Inc.

RADIATION SAFETY PLAN

GENERAL

This radiation safety plan covers the procedures for the safe and proper use and possession of radioactive material as contained in portable moisture/density gauges used to measure soil and other materials. When handled in accordance with this plan, the radioactive materials present no hazard to the licensee's employees, customers, or the general public.

RADIATION SAFETY OFFICER

All use and possession is under the direction and supervision of the radiation safety officer (RSO). The RSO is a single point of accountability between the regulatory agency and the Licensee. The RSO is responsible for all aspects of the Radiation Safety Plan, including the following special duties.

- To ensure that all terms and conditions of the license are being complied with and that the information contained is up to date and accurate.
- To ensure that the equipment is leak tested at the required 6 month intervals.
- To ensure that the equipment is only used by operators authorized by the RSO, and that they use the equipment in accordance with all relevant regulations. This will include wearing of a suitable personnel monitoring device.
- To maintain records as required by the license and the regulations.
- To ensure that all equipment is properly secured against unauthorized removal at all times.
- To serve as a point of contact and give assistance in case of emergency such as equipment damage in the field, theft, fire, and to notify the proper authorities in case of an emergency.
- To ensure that all operators have read and understand this Radiation Safety Plan.
- To arrange appropriate training for all operators.
- To post all required signs and notices at the gauge storage location including:
    1. Post document RH-2364, Notice to Employees
    2. Label the storage cabinet with "Caution Radioactive material" and international symbol.
    3. Post notice of where a copy of the organizations license, safety plan, and copy of regulations are located.
- To ensure that licensed materials possessed by the licensee is limited to the kinds and quantities of the by-product materials listed on the license.
- To ensure individuals using the gauges are:

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1. Properly trained.
2. Have received refresher training at least annually from the Radiation Safety Officer to include participation in a "dry run" of emergency procedures and review of operating and emergency procedures, Department of Transportation (DOT) requirements, all changes in regulatory requirements.
3. All users are designated by the RSO.

- To ensure that personnel monitoring devices are used as required and reports of personnel exposure are reviewed in a timely manner.
- To ensure proper authorities are notified in case of an accident, damage to the gauge, fire, or theft.
- To ensure that:
    1. The license is abiding by NRC and DOT regulations and that the terms and conditions of the license (e.g. periodic leak tests, inventories, use limited to trained, approved users).
    2. the licensee maintains required records with all required information (e.g. records of personnel exposure, receipt, transfer, and disposal of licensed material, gauge users training) sufficient to comply with NRC requirements.
- To ensure that the results of audits, identification of deficiencies, and recommendation for change are documented (and maintained for at least three years), provided to management for review, and prompt action is taken to correct deficiencies, properly secured against unauthorized removal at all times when gauges are not in use.
- To ensure that corrective actions are communicated to all personnel who use licensed material (regardless of their location or the license under which they normally work).
- To ensure that all incidents, accidents, and personnel exposure to radiation in excess of ALARA or Part 20 limits are investigated and reported to NRC and other authorities, as appropriate, within the required time limits.
- To ensure that licensed material is transported in accordance with all applicable DOT requirements.
- To ensure that licensed material is disposed of or transferred properly.
- To ensure that all users have up to date copies of NRC regulations, reviews new or amended NRC regulations, and revise licenses procedures as needed, to comply with NRC regulations.
- To ensure that the license is amended whenever there are changes in: 1) licensed activities, 2) responsible individuals, or 3) information or commitments provided to NRC in the licensing process.
- The RSO has complete independent authority to stop any operations that the RSO believes to be unsafe. The RSO will be given sufficient time to fulfill all the radiation safety duties and responsibilities listed above. The RSO, with the help of management, will perform a comprehensive review of Federal Regulations regarding radioactive material, to ensure the RSO has up-to-date regulations and new reviews and any amended regulations in order to make appropriate changes in licensee procedures to comply with the regulations. The regulations that will be reviewed are the following:
    1. 10 CFR Parts 19, 20, 30, and 170.
    2. NUREG 1556 Volume 1
    3. Title 49 Transportation, 49 CFR Parts 100-177, Research and Special Programs Administration, DOT
-
- The RSO will submit a formal report on this review process twice per year.

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OPERATION

- The operator will exercise suitable control over the gauge at all times. At no time is the gauge to be left unattended or in the possession of an unauthorized person.
- When not being used for field measurements, the gauge will be locked and returned to its storage/transportation case.
- When testing is complete, the gauge will be returned to its permanent place of storage as soon as possible.
- When using equipment the operator will wear the personnel monitoring device assigned. When the operator is not using the equipment, the monitoring device will be kept in a radiation free, low heat area.
- At all times operators will observe ALARA principles to minimize any dose received. As low as any dose achievable.
- While the equipment is in the operators possession, the operator will have:
    1. Copy of the License.
    2. Copy of this Radiation Safety Plan with emergency procedures and telephone call down list.
    3. Copy of Letter/Card of Authorization from the RSO.
    4. Copy of the gauge operating manual.
    5. Copy of current leak test certificate.

TRANSPORTATION

- During transportation, the equipment shall be fully secured in the transporting vehicle and located away from personnel. When transported in a closed vehicle (car or van), the case will be locked and the vehicle will be locked when the operator is not in the vehicle. When transported in an open bed vehicle the case will be locked and the case securely fastened and locked to the truck bed when the operator is not in the vehicle. The DOT case will be placed in a locked metal storage box securely bolted and chained to the bed of the vehicle.
- The equipment will only be transported in an approved DOT shipping container will all the required labels and markings.
- During transportation, the operator will have shipping papers on the seat adjacent to the driver or in a holder which is mounted to the inside of the drivers side of the vehicle describing the radioactive material with the proper nomenclature. An example shipping paper is attached.
- When an open bed vehicle is parked overnight at a hotel or motel, the operator shall cover the case in the secured transport position or lock the case in the cage of the vehicle.
- When shipping by common carrier, the package shall be in compliance with 49 CFR 170 to 179.

MAINTENANCE

- Periodic maintenance will include cleaning of the gauge. The operator will have received proper instruction on how to clean the gauge and will wear his/her assigned monitoring device.

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- No maintenance will be performed in which the radioactive source is removed from the gauge. The gauge will be returned to the manufacturer or an approved service center for this type of service.
- A leak test will be performed once every 6 months (or at the interval specified in the license) using an approved leak test kit and in accordance with the gauge manufacturers instructions. The RSO will leak test the gauge and will wear his assigned monitoring device.
- The shipping case will be periodically checked for integrity, and to verify that all labels are present and readable.

RECORDS

Records will consist of:

Personnel monitoring

A personnel operating the gauges shall be authorized only by the RSO and shall have the necessary training to do so. All authorized users shall wear approved dosimetry badges supplied by Radiation Detection Company.

Mailing Address (UPS, FedEx, and DHL)

Radiation Detection Company
8095 Camino Arroyo
Gilroy, CA 95020

Phone: 408-842-2700
Fax: 408-847-2988

Badge Return Address

Radiation Detection Company
P.O. Box 22300
Gilroy, CA 95021-2340

Results of monitoring shall be maintained in the permanent records of Piedmont Engineering, Inc. and are available for inspection by the personnel.

Leak Testing

Leak testing will be performed by Qal-Tek Associates or use a leak test kit supplied by Qal-Tek Associates. The address and phone number for Qal-Tek is:

Qal-Tek Associates
101 Technology Drive
Idaho falls, Idaho 83401
208-523-5557

Leak test kits will be returned to Qal-Tek to determine if the source is leaking. Leak tests will be performed at six month intervals and only the RSO will take these tests unless it is performed by Qal-Tek during yearly calibration and testing of the gauge.

No maintenance will be performed on any equipment that involves removing the source or placing it in an unshielded position.

Training and Gauge Inventory

A check out log will be attached to the storage cabinet. Information on the log will include the gauge serial number, the name of the operator checking out the gauge, the date checked out, the destination, the estimated return date, and the actual return date.

All operators will complete a manufacturers Operator Training Course. Operators will be given special training as required for their individual work assignments.

If the gauge is physically damaged:

1. If any moving equipment is involved, stop its movement, until the extent of contamination, if any, can be established.
2. Cordon off the area around the incident. An area with a radius of 15 feet will be sufficient.
3. Visually inspect the gauge to determine the extent of the damage to the source(s), source(s) housing, and shielding.
4. At the earliest possible time, when the situation is under control, contact the RSO. Describe the conditions and follow the instructions of the RSO. The RSO will immediately notify the appropriate regulatory agency.

- Radiation Safety Officer is Patrick L. Redmond
  Business Address:

  Piedmont Engineering, Inc.
  1215 Apple's Way
  Belgrade, Montana 59714

  Work Phone 406-388-8578
  Cell Phone 406-209-2054
  Home Phone
  Alternate

- Belgrade Police Department

  406-388-4262 or 388-1480 after 5 PM

- Gallatin County Emergency Services

  406-582-3121 or 406-582-2100 Emergency

- Montana Health Department

  406-444-5622

Theft or Loss

Immediately notify the RSO. The RSO will immediately notify the appropriate regulatory agency and the police.

Belgrade Police Department 406-388-4262 or 388-1480 after 5 PM

Fire

- Call the Belgrade Fire Department 406-388-4480
- Take action appropriate with a fire to protect personnel.
- Notify the RSO
- Stand by to advise the fire fighters as the nature, locations, and potential hazards of the radioactive materials. Supply them with an information packet consisting of the facility layout and a data sheet of the equipment including a photograph. Be sure to include an other important information (e.g. explosives, guard dog, etc.)
- Melting points:

Material	°F	°C
Stainless Steel	2550	1400
Carbide	2000	1090
Aluminum	1005	540
Lead	620	327
Polyethylene	257	125

Temperatures in an industrial fire will normally range from about 500 °F and higher at floor level to a high at the ceiling of 1400 to 1800 °F. The polyethylene and lead would melt in most fires, the aluminum only in a severe fire. The stainless steel capsule would not reach its melting point in most fires.

DISPOSAL/DECOMMISSIONING

- Disposal will only be performed by transferring to a properly licensed organization.
- The regulatory agency will be notified 30 or more days in advance of any relocation of the storage area. Formal decommissioning will not be required, provided the leak tests are current.

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RADIATION SAFETY PLAN

This radiation safety plan will be implemented at all times. A copy of these procedures shall be maintained in the licensee's radioactive materials license file, another copy in the shipping case of the nuclear gauge at all times.

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Certificate of Completion

Safe Operation of Nuclear Soil Moisture-Density Gauges
NTL Engineering & Geoscience, Inc.

Certifies that

Patrick Redmond

of

Piedmont Engineering, Inc.

Has successfully completed a Nuclear Regulatory Commission recognized training course for the safe operation of nuclear moisture-density gauges. Topics presented in this course were as follows:

1. Purposes of soil densification and control
2. Fundamentals of nuclear energy and radiation
3. Nuclear gauge descriptions and operation
4. Nuclear Gauge Safety
   - A. Health effects of radiation
   - B. Methods of minimizing radiation exposure
   - C. Transportation & storage procedures
   - D. Emergency procedures
   - E. Personal monitoring
5. Nuclear gauge licensing requirements

May 11, 2005

Course Date

Kenneth D. Munski, PE, Instructor
Great Falls, MT

This Certifies

Patrick Redmond

has successfully completed an NRC recognized course of instruction and is fully qualified to operate NUCLEAR GAUGES

[redacted]

Radiation Safety Officer

NRC Recognized Instructor

May 11, 2005

Course Date

CERTIFICATE OF COMPLETION

PRESENTED BY

QAL-TEK ASSOCIATES, L.L.C.

TO

Audra Marks

FOR HAVING SUCCESSFULLY COMPLETED THE **RADIATION SAFETY AND NUCLEAR GAUGE USER SAFETY** TRAINING IN ACCORDANCE WITH THE REQUIREMENTS OF **NUREG 1556 VOL 1, 10 CFR PARTS 19 & 20**, AND DOT HAZMAT REQUIREMENTS IN **49 CFR PART 172**.

PRESENTED THIS DAY

3rd day of April, 2007

Signature of Trainer _____ / Dee Armstrong Location: Idaho Falls, ID

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

May 31, 2007

Piedmont Engineering, Inc.
ATTN: Patrick L. Redmont
Radiation Safety Officer
1215 Apple's Way
Belgrade, Montana 59714

SUBJECT: DEEMED TIMELY LETTER

We acknowledge receipt of your application dated May 31, 2007, requesting your byproduct materials license be renewed. Your application is deemed timely filed and, accordingly, the license will not expire until final action has been taken by this office.

We have completed a preliminary review of your submittal. This review was cursory in nature and should not be considered a complete technical review. A complete technical review of the submitted information will be conducted within 180 days.

Any correspondence regarding this application should reference the identifying numbers specified below. If you have questions or require clarification on any of the information stated above, we encourage you to contact us at (817) 860-8103. Thank you for your cooperation.

Sincerely,

Colleen Murnahan

Colleen Murnahan
Licensing Assistant
Nuclear Materials Licensing Branch

Docket: 030-34456
License: 25-27563-01
Control: 471385

	:	(FOR LFMS USE)
	:	INFORMATION FROM LTS
BETWEEN:	:	----------
	:	
License Fee Management Branch, ARM	:	Program Code: 03121
and	:	Status Code: O
Regional Licensing Sections	:	Fee Category: 3P
	:	Exp. Date: 20070531
	:	Fee Comments: _____
	:	Decom Fin Assur Reqd: N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
   Applicant/Licensee: PIEDMONT ENGINEERING, INC.
   Received Date: 20070531
   Docket No: 3034456
   Control No.: 471385
   License No.: 25-27563-01
   Action Type: Renewal

2. FEE ATTACHED
   Amount: /
   Check No.: _____

3. COMMENTS

Signed Colleen Murnahan
Date 5-31-07

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered /__/)

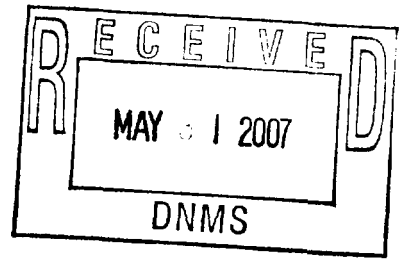
1. Fee Category and Amount: _____

2. Correct Fee Paid. Application may be processed for:
   Amendment _____
   Renewal _____
   License _____

3. OTHER _____
   _____

Signed _____
Date _____

PIEDMONT ENGINEERING, Inc.



NRC, Region IV
Division of Nuclear Materials Safety

Attn: Ms Colleen Murnahan

Colleen:

Please find enclosed the first page of Form 313 with my signature

I will attach items 5 through 11 tomorrow.

Thank you.

Patrick Redmond, PE
Principal

1215 APPLE'S WAY
BELGRADE, MONTANA 59714

email: piedengineering@qwest.net

PHONE: (406) 388-8578
FAX: (406) 388-8579

M 471385