State of Washington

Radioactive Materials License

License Number: WN- I0508-1

Pursuant to the Nuclear Energy and Radiation Control Act, RCW 70.98, and the Radiation Control Regulations, chapters 246-220 through 246-255 WAC, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive materials for the purpose(s) and at the place(s) designated below. **This license is subject to all applicable rules and regulations** promulgated by the State of Washington Department of Health.

1. Licensee Name:	3. License Number:
Perma-Fix Northwest Richland, Inc.	**WN-I0508-1** **Amendment in Entirety** **Amendment 37**
2. Address:	**4. Expiration Date:**
2025 Battelle Boulevard Richland, Washington 99354	May 31, 2016
	5. Reference Number(s):

6. Radioactive Material (element and mass number).	7. Chemical and/or Physical Form.	8. Maximum quantity licensee may possess at any one time.*
6.A. Any radioactive material Atomic Numbers 1-83.	7.A.1. Solid form (contamination, as received or possessed, on articles or in waste form) sources for processing, or irradiated hardware, excluding explosive materials. 7.A.2. Liquid form (containing contamination as received or possessed or in waste form), sources for processing, excluding explosive materials.	8.A. 150 curies (5.55 TBq) total, not to exceed the following individual isotope activity limits: Iodine 129 - 500 millicuries (18.5 GBq).
6.B. Special Nuclear Material.	7.B.1. Solid form (contamination, as received or possessed, on articles or in waste form) sources or irradiated hard-ware, excluding explosive materials.	8.B. Not to exceed unity formula quantities as specified in WAC 246-220-010 under the definition "Special nuclear material in quantities not sufficient to form a critical mass."

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	7.B.2. Liquid form (containing contamination as received or possessed or in waste form), excluding explosive materials.	
6.C. Source material.	7.C.1. Solid form (contamination, as received or possessed, on articles or in waste form) sources or irradiated hardware, excluding explosive materials. 7.C.2. Liquid form (containing contamination as received or possessed or in waste form), excluding explosive materials.	8.C. 2,000 kilograms total.
6.D. Any other radioactive material, Atomic Numbers 84-103, except Special Nuclear Material and source material.	7.D.1. Solid form (contamination, as received or possessed, on articles or in waste form) sources or irradiated hardware. 7.D.2. Liquid form (containing contamination as received or possessed or in waste form), excluding explosive materials.	8.D. 10 curies (370 GBq) total, except as specified in License Condition 9.D.
6.E. Any radioactive material.	7.E. Check or calibration sources in any form.	8.E. Total activity not to exceed 0.1 curie (3.7 GBq).

* **Aggregated activities shall not meet or exceed the sum of fractions for Category 2 thresholds, as specified in WAC 246-237-900, Appendix A, Table 1.**

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CONDITIONS

9. Authorized use.

A-D (1) Overpack solid waste.

(2) Volume reduction of equipment, scrap material, or waste.

(3) Decontamination of equipment, facilities or scrap material.

(4) Broker wastes and materials.

(5) Store prior to processing or shipment.

(6) Decontaminate equipment, articles, or facilities, at offsite locations. A detailed work plan shall be submitted to DOH Waste Management in writing in advance of the planned work, and the project shall not begin until written approval is received from DOH.

(7) Solidify and/or absorb liquid waste.

(8) Segregate, stabilize, encapsulate, and treat waste.

(9) (reserved for future treatment option)

(10) For use in the development of new techniques for treating radioactive material or waste in order to reduce the volume of waste that must be disposed. A detailed work plan shall be submitted to DOH Waste Management in writing at least one month in advance of the planned work, and the project shall not begin until written approval is received from DOH.

D. (1) For any container in which the activity of the diffuse waste is greater than 100 millicuries (3.7 gigabecquerels), the licensee will notify DOH Waste Management prior to acceptance.

(2) For any container in which the activity of the diffuse waste is greater than 10 millicuries (370 megabecquerels), Perma-Fix Northwest Richland, Inc. will institute Mixed Waste Operational Procedure (LL/MWOP) 104 (Non-Routine Operational Planning).

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(3) For any container or package that contains a discrete source (sealed or otherwise) with activity greater than 10 millicuries (370 megabecquerels), DOH Waste Management approval will be required prior to receipt or prior to processing for material already on site.

E. For use as check and calibration sources.

10. Radioactive material shall be received, stored, and processed at 2025 Battelle Boulevard, Richland, Washington, 99354.

11. The licensee shall comply with the provisions of chapter 246-220 WAC, "Radiation Protection – General Provisions"; chapter 246-221 WAC, "Radiation Protection Standards"; chapter 246-222 WAC, "Radiation Protection – Worker Rights"; chapter 246-231 WAC, "Packaging and Transportation of Radioactive Material"; chapter 246-232 WAC, "Radioactive Material – Licensing Applicability"; chapter 246-235 WAC, "Radioactive Materials – Specific Licenses"; chapter 246-237 WAC, "Radiation Protection – Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material"; chapter 246-246 WAC, "Radioactive Criteria for Decommissioning"; chapter 246-247 WAC, "Radiation Protection – Air Emissions"; chapter 246-249 WAC, "Radioactive Waste – Use of the Commercial Disposal Site"; and chapter 246-254 WAC, "Radiation Protection – Fees".

12. Reference to "DOH Waste Management" in this license shall mean the Waste Management Section, Washington State Department of Health, or successor agency.

13. The Radiation Safety Officer for this program shall be Curt N. Cannon. The radiation safety staff will be maintained as described in the MWOM. At a minimum, staff shall include:

A. One qualified and approved RSO,

B. One Assistant RSO or HP Manager,

C. One Dosimetry Clerk,

D. One Radiological Engineer, and

E. One Contract or Staff CHP as required.

14. The licensee shall notify DOH Waste Management in writing 30 days prior to any changes in the licensee corporate structure, and shall notify DOH Waste Management immediately with any modification to the Site Manager or RSO positions (e.g., employee departure, and replacing or changing titles).

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15. Minimum Staffing. The Operations Manager and RSO under the direction of the General Manager are to ensure that sufficient staff is assigned when processing or handling Radioactive Material as described in the MWOM. At a minimum, staff shall include:

    A. One Emergency Coordinator (EC) qualified supervisor,

    B. One Level III HP trained in First Response to Emergencies, and

    C. One Operations employee qualified at Level II for the facility processing or handling of radioactive material.

16. All employees shall have the right and responsibility to stop work if it is determined unsafe or if it is outside the bounds of the radioactive materials license or work instructions.

17. The licensee shall maintain and follow the Perma-Fix Northwest Richland, Inc. Emergency Plan, as specifically approved by DOH Waste Management. Changes to the Emergency Plan shall be approved, in writing, by DOH Waste Management prior to implementation.

OPERATIONS

18. All operations will be conducted and controlled as outlined in the Perma-Fix Northwest Richland, Inc. Mixed Waste Operations Manual (MWOM). Prior DOH Waste Management approval is required for any changes to the facility installed equipment. Changes such as moving portable equipment can be done without DOH Waste Management notification.

19. All operations involving licensed radioactive material must be conducted using licensee procedures approved by DOH Waste Management. Procedures requiring prior approval are Quality Procedure QP 2.1 (Plant Personnel Qualification Procedure), Occupational Health and Safety Program procedure OHS 032 (Respirator Fit Testing Requirements), and those contained in the Mixed-Waste Operational Procedures (MWOP), except those operating procedures specifically identified in LL/MWOP 102 (Revisions to Operational Procedures). New or revised procedures shall be reviewed and approved as described in LL/MWOP 102 (Revisions to Operational Procedures). DOH Waste Management approval of new or revised procedures shall constitute incorporation by reference of those procedures.

20. The total gross weight of waste and material on site shall not exceed 3,250,000 lbs (1,480,000 Kg).

The total net weight of equipment not installed in building and processes shall not exceed 1,000,000 lbs (454,000 Kg). Equipment is defined as material that has been removed from service, is being stored for eventual reuse, and has useable qualities. Material for scrap or material for recycling is not equipment. Shield blocks and empty containers must be included in the equipment total.

21. A. All waste and material received or generated by the licensee shall not be stored onsite for longer than one (1) year from date of receipt or generation. Contaminated equipment may remain onsite until the end of the equipments useful life. All material shall have legible markings and labeling.

    B. Waste for processing that also contains Iodine 125 may be stored on site for up to two (2) years, if the quantity of I-125 in a package is greater than 23.4 millicuries (865.8 megabecquerels), to allow for safer processing.

    C. In the event the above time restraints are not met, the licensee shall notify DOH Waste Management and include the Extended Waste (EW) as a self-identified Item of Non-Compliance (IONC) in the Perma-Fix Northwest Richland, Inc corrective actions program.

22. Radioactive material shall only be stored indoors. Temporary placement of packages (e.g., staging of packages around processing buildings) for a period not exceeding 24 hours is not considered storage. Radioactive material, in closed, metal, containers (except drums), which have been prepared for transportation off site, may be stored outside the Mixed Waste buildings but within the designated areas of the Radiological Controlled Area.

23. The licensee shall conduct a Quality Assurance Program based on NQA-1, that includes a preventative maintenance program. Changes to the Quality Assurance Program that affect the radiation safety program, including Quality Procedure QP 2.1 (Plant Personnel Qualification Procedure), shall be submitted to DOH Waste Management for approval 30 days prior to implementation.

24. The licensee shall maintain, for DOH Waste Management review, records of all preventative maintenance program activities (schedule of past activities and future plans).

25. The licensee shall conduct a bioassay program in accordance with chapter 246-221 WAC.

26. The licensee shall conduct an external radiation monitoring program in accordance with chapter 246-221 WAC.

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27. Records required by WAC 246-220-020 will be available for inspection at 2025 Battelle Boulevard, Richland, Washington, 99354.

28. The licensee shall conduct an environmental monitoring program capable of detecting the potential contribution of radioactive material from the facility to the environment. The program shall include collection of samples and analyses as described in the Perma-Fix Northwest, Inc. Environmental Monitoring Plan and LL/MWOPs 212 through 217, and as subsequently revised per requirements of the Environmental Sciences Section, Washington State Department of Health, or successor agency. The licensee shall coordinate sampling schedules with DOH Waste Management, when possible, and provide duplicate samples on a prearranged frequency.

29. Decommissioning Funding Plan. The licensee shall have and maintain a Washington State Department of Ecology-approved financial surety arrangement adequate to cover decommissioning of the facility and disposal of all radioactive material possessed under this license.

30. The licensee will begin decommissioning the facility within twelve months of ceasing operations involving radioactive material, in accordance with applicable regulations.

31. An air emissions monitoring program shall be conducted according to the air license(s) issued by the Radioactive Air Emissions Section, Washington State Department of Health, or successor agency, in accordance with chapter 246-247 WAC.

32. Sealed sources for check and calibration.

    A. (1) Each beta or gamma sealed or electroplated source allowed in Item 6.E containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed six (6) months. Sources allowed in Item 6.E designed for the purpose of emitting alpha particles must be tested for leakage and/or contamination at intervals not to exceed three (3) months. In the absence of a certificate from a transferor indicating that a test has been made within six months for beta or gamma sources or three months for alpha sources prior to the transfer, a sealed source received from another person shall not be put into use until tested.

    (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries (3.7 megabecquerels) or less of beta and/or gamma emitting material or 10 microcuries (370 kilobecquerels) or less of alpha emitting material.

(3) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source is in permanent storage. In lieu of leak tests, the storage area shall be surveyed every six months and the sources shall be leak tested prior to any handling or removal from storage.

B. The test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored, on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of becquerels (or microcuries) and maintained for inspection by DOH Waste Management.

C. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed in accordance with department regulations. A report shall be filed within five (5) days of the test with DOH Waste Management, describing the equipment involved, the test results, and the corrective action taken.

D. The licensee is authorized to collect and analyze leak test samples, for their own sources (not as a commercial service), in accordance with the following procedures: LL/MWOP 229 (Source Control and Inventory); and LL/MWOP 242 (Wipe Check for Non-Exempt Sources). Alternatively, leak test samples may be collected and/or analyzed by other persons specifically authorized by DOH Waste Management, the U.S. Nuclear Regulatory Commission, or an Agreement State to perform such services.

E. The licensee shall conduct a physical inventory every six months as described in LL/MWOP 229 (Source Control and Inventory), to account for all sealed sources received and possessed under Item 6.E. The records of the inventories shall be maintained for three years from the date of the last DOH Waste Management inspection.

RECEIPT

33. All Primary Waste (waste material traceable to an individual customer or clearly generated as a result of processing customer waste) will remain attributable to the original generator, as defined in WAC 246-249-090(6)(c)(ii).

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34. The licensee shall establish in every contractual obligation relating to radioactive materials the ability to return radioactive materials, processed or unprocessed, to the prior licensed possessor.

35. Radioactive waste shall be packaged in such a manner that waste containers received at the facility do not show:

    A. Significant deformation.

    B. Loss or dispersal of contents.

    C. An increase in the external radiation levels as recorded on the manifest, within instrument tolerances.

    D. Degradation due to rust or other chemical action that results in a loss of container integrity.

36. Waste shipments shall not be accepted at the facility unless accompanied by the following (a single shipment shall consist of not more than one vehicle or one tractor with legal trailer(s) attached if transported by road, or train if transported by rail):

    A. An accurate, legible and properly executed shipment manifest approved by DOH Waste Management (e.g., NRC form 540, 540A, 541, 541A, 542, 542A).

    B. Washington State Patrol or Washington State Utilities and Transportation Commission vehicle inspection certificate, or a current visible Washington State 90-day vehicle inspection seal. Rail shipments are required to have a current railroad safety inspection performed on transport cars.

    C. Properly executed current DOH Form RHF-31.

    D. Properly executed form NRC 741 when required.

    E. Upon DOH Waste Management request, other permits or documentation required under this license, or by state or federal law or regulation.

37. The licensee shall use a Quality Assurance/Quality Control process to confirm that the radioactivity declared and the type of material described on the shipping manifest is consistent with the actual material received. Any difference from manifested values must be corrected, and the corrected information used to determine compliance with this license and for work planning.

38. All received radioactive waste shall be packaged, loaded, received, and transported in accordance with all applicable U.S. Department of Transportation regulations, U.S. Nuclear Regulatory Commission regulations, state regulations, and the requirements of this license. Nothing in this license shall in any way relieve the licensee from full compliance with all applicable state and federal laws and regulations, including but not limited to the Resource Conservation and Recovery Act of 1976, as amended, and the State Hazardous Waste Management Statutes of 1976, as amended, and subsequently enacted regulations.

SHIPMENTS

39. All shipped radioactive waste shall be packaged, loaded, received, and transported in accordance with all applicable U.S. Department of Transportation regulations, U.S. Nuclear Regulatory Commission regulations, state regulations, and the requirements of this license. Nothing in this license shall in any way relieve the licensee from full compliance with all applicable state and federal laws and regulations, including but not limited to the Resource Conservation and Recovery Act of 1976, as amended, and the State Dangerous Waste Management Statutes of 1976, as amended, and subsequently enacted regulations, as described in MWOM Section 9, "Facility Acceptance and Shipping of Radioactive Wastes".

REPORTS

40. The licensee shall notify the department, in writing, within 5 days of the total activity, authorized under this license, exceeding 80% of the sum of fractions for Category 2 thresholds, as specified in WAC 246-237-900, Appendix A, Table 1.

41. The licensee shall notify DOH Waste Management of each incoming shipment of radioactive waste prior to offloading. DOH Waste Management notification is required for any shipment that does not adhere to the conditions of this license. Any shipment which violates a license condition will be placed in a safe condition and then held for DOH Waste Management inspection.

42. The licensee shall submit to DOH Waste Management by the tenth day of each month a report of all outstanding IONC. Each report for waste on site more than one (1) year shall contain the IONC number issued by DOH Waste Management, the receipt number, receipt date, a detailed reason for not shipping the material off site, the date the waste is expected to be removed, and the date it was removed from the facility.

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43. For radioactive material, the possession limit (activity and weight) shall not exceed limits specified in Item 8 and License Condition 20 of this license. A written verification that limits are not exceeded shall be submitted to DOH Waste Management by the tenth day of each month, for the previous calendar month.

44. An inventory of all radioactive material, waste, and equipment on site will be completed each calendar year. A report of this inventory shall be sent to DOH Waste Management by February 15 of each year.

45. By June 30 of each year, the licensee shall submit a copy of its financial report or a certified financial statement and Security and Exchange Commission (SEC) Form 10K.

46. The licensee shall submit an annual environmental report. At a minimum, the annual report shall include a comprehensive analysis, with statistical trend analyses and discussions of all anomalous results and actions taken, of all sample results, radionuclide usage, and the annual wind rose for the facility. The report shall also include a detailed description of events in which contaminants were released to the restricted/ unrestricted environment (outside of buildings) during the preceding year. The quantity and concentration of each principal contaminant released shall also be reported. The report shall be submitted in general accordance with the department's document entitled "Recommended Content and Format for Annual Environmental Reports". Deviations in the reporting format must be approved by DOH Waste Management. In addition, the licensee shall report immediately any environmental monitoring results in excess of reporting levels specified in the Mixed-Waste Operations Manual (MWOM). Two hardcopies of the annual (calendar year) environmental monitoring report shall be submitted to DOH Waste Management no later than June 30 of each year. In addition to the hard copies, the report shall be submitted in electronic format.

47. A current aerial photo of the entire facility shall be submitted to DOH Waste Management. This photo is required by June 30 on a biennial basis.

48. The licensee shall conduct and document in a written report the annual review of the ALARA (As Low As Reasonably Achievable) Program. At a minimum, the annual ALARA review and written report shall include:

    A. Detailed description of changes in the ALARA Program that were implemented during the review period,

    B. Comprehensive analysis, with statistical trends, discussion of all anomalous results, actions taken, and comparison to ALARA goals for individual (worker) doses and facility (collective) doses,

C. Comprehensive analysis, with statistical trends, and comparison to ALARA goals for the duration of time licensee generated waste remained onsite,

D. Review of the facility layout, plant operations, new system installations, and operating procedures against ALARA goals to determine if modifications to systems, the facility, or procedures and practices are required to ensure compliance with ALARA goals, including reduction in exposure and reduction in the duration of time licensee generated waste remains onsite,

D. New ALARA goals for individual (worker) doses, facility (collective) doses, and the acceptable duration of time licensee generated waste may remain onsite, and

F. Specific recommendations, including implementation of plans for changes in systems, the facility, or procedures and practices that are deemed necessary to achieve compliance with ALARA goals, including the reduction of exposure and the reduction in the duration of time licensee generated waste remains onsite.

The written ALARA reports shall be maintained by the licensee. A copy of the report shall be submitted to DOH Waste Management no later than June 30 of each year for the previous calendar year's operations.

49. The department may suspend the shipping privileges of the responsible generator, or broker, or both the generator and broker if one or more packages in a shipment of material or waste does not meet one or more of the requirements of Title 246 WAC, NRC regulations, DOT regulations, or the conditions of the facility's Radioactive Materials License.

Privileges may be reinstated provided:

A. The generator or broker who has been suspended submits a quality assurance procedure designed to correct previous problems and to achieve and maintain compliance with all applicable requirements; and

B. Subject to state decision, a point-of-origin inspection by the state of Washington of the waste management activities of the generator or broker, whose privileges has been suspended, indicated compliance with all applicable requirements and regulations.

The licensee may bring packages into compliance prior to sending back

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50. Except as specifically provided by this license, the licensee shall possess and use radioactive material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in the documents listed below, which are incorporated by reference into this license, and the department's "Rules and Regulations for Radiation Protection." The department's "Rules and Regulations for Radiation Protection" shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations. Except as provided in License Condition 19, any change to the documents listed below shall require departmental approval in the form of an amendment to this license.

    A. License application and attachments, dated July 28, 2008.

    B. Letter from C. Cannon (Perma-Fix Northwest, Inc.) to S. Murphy (DOH Waste Management), dated August 25, 2008, RE: additional license application information.

    C. Perma-Fix Northwest Richland, Inc. Mixed Waste Operations Manual, Rev 05, dated June 14, 2008.

    D. Perma-Fix Northwest Richland, Inc. Emergency Plan, Rev. 02, dated June 8, 2012.

    E. Perma-Fix Northwest Richland, Inc. Environmental Monitoring Plan, Rev 01, dated June 8, 2012.

    F. Perma-Fix Northwest Richland, Inc. Low-Level Operational Procedure LLOP 102, Revisions to Operational Procedures, Rev 07, dated June 8, 2012.

    G. Letter from C. Cannon (Perma-Fix Northwest, Inc.) to S. Murphy (DOH Waste Management), dated June 8, 2012, RE: changing calibration service company from Ludlum to SEC.

    H. Letter from C. Cannon (Perma-Fix Northwest, Inc.) to S. Murphy (DOH Waste Management), dated June 8, 2012, RE: extremity dosimetry.

    I. Letter and attachment dated December 19, 2013, RE: request for approval of Perma-Fix Northwest Richland, Inc. Environmental Radiological Monitoring Program, Rev 02, dated 12/13 (supersedes previous Perma-Fix Northwest Richland, Inc. Environmental Monitoring Plan, Rev 01, dated June 8, 2012 as referenced in L.C. **50.E**).

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J. Letter and attachments dated September 30, 2014, RE: request to have specified operating procedures, as indentified in LL/MWOP 102 (Revisions to Operational Procedures) no longer require DOH approval prior to implementation; and request to implement the following update documents:

(i) Perma-Fix Northwest Richland, Inc. Low-Level Operational Procedure LL/MWOP 102, Revisions to Operational Procedures, Rev 08, dated 01/06/15,

(ii) Perma-Fix Northwest Richland, Inc. Mixed Waste Operations Manual, Rev 06, dated 09/14.

(iii) Perma-Fix Northwest Richland, Inc. Emergency Plan, Rev. 03, dated June, 2014.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: **March 19, 2016** By _____
Mikel J. Elsen, Supervisor
Waste Management Section