

Environmental Permitting Fact Sheet

General Permit for In Situ Groundwater Remediation: Enhanced Aerobic Biodegradation

Permit Overview

This general permit is issued under the authority of, and is administered by, the Department of Energy and Environmental Protection (DEEP) Bureau of Water Protection and Land Reuse. DEEP uses both individual and general permits to regulate activities. Individual permits are issued directly to an applicant, whereas general permits are issued to authorize similar activities by one or more registrants throughout a prescribed geographic area. Authorization of an activity under a general permit is governed by that general permit. A general permit sets terms and conditions for conducting an activity which, when complied with, are protective of the environment. General permits are a quicker and more cost-effective way to permit specific activities for both DEEP and the permittee.

This general permit authorizes oxygenation of groundwater at a controlled rate to enhance in situ aerobic degradation of organic pollutants, and allows use of several different sources of oxygen and delivery methods. Supplemental nutrients or cultured bacteria may also be added under the general permit framework. Chemical oxidation of pollution is *not* authorized under this general permit; and the permit incorporates limits on ozone and hydrogen peroxide to ensure their use solely as an oxygen source for biodegradation.

Authorizing Statutes

Sections 22a-133z, -430, -430b, and -454(e) of the Connecticut General Statutes authorize this permit.

As used in this general permit:

“*Aerobic Biodegradation*” means the degradation of organic pollutants, as a result of biological activity in the presence of oxygen, by the breaking of intramolecular bonds through the substitution of functional groups, mineralization, or other processes, resulting in the derivation of energy or increase in biomass;

“*Oxygen Releasing Substance*” means a substance that, when combined with water, supplies oxygen *at a controlled rate* in a concentration suitable to support aerobic biologic activity. Oxygen releasing substances include, but are not limited to, metal peroxides and oxyhydroxides, and may have intercalated phosphates, but exclude any substance that by intended or

unintended effect results in direct chemical oxidation of a measurable volume of organic constituents; and

“*Petroleum Fuel*” means a petroleum product produced for use as fuel for heating or transportation, including but not limited to gasoline, jet fuel, diesel fuel, and heating oil, excluding petroleum products produced for use as lubricants or solvents, and excluding fuels blended with solvents or wastes or over twenty percent (20%) non-petroleum in origin;

Specific Authorized Activities

The specific activities authorized pursuant to this general permit are:

- (1) Emplacement of oxygen releasing substances in an open excavation, resulting from removal of a tank or polluted soil, to remediate petroleum fuel pollution;
- (2) Emplacement of removable devices containing oxygen releasing substances to remediate petroleum fuel pollution;
- (3) Injection or emplacement of oxygen releasing substances on or below the ground surface to remediate petroleum fuel pollution;
- (4) Discharge, injection, or emplacement of other, supplemental nutrient substances and/or pH adjusting chemicals, as determined necessary to enhance the aerobic growth environment;
- (5) Discharge, injection or emplacement of cultured naturally occurring biologic organisms, as determined necessary to augment the site’s natural organisms;
- (6) Discharge of oxygen or ozone in gaseous form or of oxygen, ozone, or dilute hydrogen peroxide contained in water, below the ground surface, to remediate petroleum fuel pollution;
- (7) Injection or emplacement of oxygen releasing substances or discharge of oxygen or ozone in gaseous form or of oxygen, ozone, or dilute hydrogen peroxide contained in water to enhance aerobic biodegradation for remediation of biodegradable pollutants other than petroleum fuels;
- (8) Maintenance of any well, borehole, or infiltration structure, through ancillary short term discharge of substances necessary to maintain a condition facilitating its continued use as intended; and
- (9) The generation, and subsequent presence in water within the area of authorized activity, of metabolic byproducts associated with the authorized activities.

Requirements For All Authorized Activity

Read the general permit carefully to be sure you can comply with the general permit. If you fail to comply with the general permit, you are potentially subject to legal action.

All authorized activity must comply with the conditions set forth in the general permit. General permit conditions include: supervision by qualified individuals; consent of property owners; notification of abutters and others; discharge limits; management practices; and monitoring requirements, especially with respect to potential impacts to supply wells and excursions beyond the predicted zone of influence. The general permit also requires reporting of activity, specific notification of any indications of unexpected outcomes, and mitigation of adverse conditions caused by the discharge.

Evidence of a release of pollution is required (either qualitative or quantitative) for any activity to remediate the pollution to be authorized pursuant to this general permit. DEEP authorization of remediation activity does not provide a guarantee that remedial goals will be met by the proposed activity.

Authorization of Activity

Registrations for activities to remediate pollution that is not due to petroleum fuels, and also for petroleum fuel pollution remediation activities with potential to impact a public water supply, on certain water company lands, or in or within two feet of bedrock **must** be approved by DEEP before activities may begin, as identified in Section 3(e)(1) of the general permit.

Registrations for most other activities must be also be approved by DEEP, however DEEP may instead issue a certificate of coverage in lieu of an approval for: 1) certain sites polluted by petroleum fuel that are in supervised remediation programs or 2) sites polluted solely by heating oil released from a 2100 gallon or smaller tank when less than 150 pounds of oxygen is supplied in any twelve month period by the activity proposed.

For these types of sites, if the activity is conducted in areas near private supply wells, in Class GA groundwater areas, or has sensitive settings or site conditions present, as identified in Section 3(e)(2)(A) of the general permit, or if activity involves oxygenation by means other than introduction of oxygen releasing substances, the DEEP may only issue a certificate of coverage in lieu of an approval if the registrant has *optionally* provided, with the registration, a Certification for Site Conditions by a Licensed Environmental Professional (LEP) or a Professional Engineer (P.E.) as allowable in the general permit. (See “*What is a Certification for Site Conditions?*” below.)

When proposed activity includes addition of nutrients, pH adjustment, or bio-augmentation, issuance of a certificate of coverage in lieu of an approval is only permissible for supervised remediation sites (as defined in the permit) and is similarly based on submittal of an *optional* Certification for Site Conditions with the registration.

The general permit has a limited provision for self-implementation upon registration when the proposed activity is introduction of oxygen releasing substances providing less than 150 pounds of oxygen into an open tank grave to remediate a release of heating oil from a tank smaller than 2100 gallons capacity. This provision is not applicable if the registration must be approved by DEEP due to site settings or conditions as specified in Section 3(e)(3) of the general permit. However an *optional* Certification for Site Conditions may be included with the registration if the activity is within 75 feet of a supply well other than the property owner’s or within 25 feet of a sensitive site condition other than a basement and, only for these site conditions, approval of registration is not needed and activity is authorized upon registration.

Registration

Who must register?

Anyone wishing to introduce oxygen, at a controlled rate, and any other necessary supplemental substances into soil or groundwater to enhance aerobic biodegradation of pollution. The registrant may be a property owner or, if acting with the owner's permission, an "other responsible party", environmental consultant or remediation contractor.

How many activities can be registered on one form?

A registrant shall register all activities at a site for which the registrant seeks authorization under this general permit on a single registration form. Adjacent parcels that are associated with a single source of pollution are considered a single site in this general permit, and may all be registered on the same form. Separate unassociated sites must each be registered on separate forms.

When should a registration form be submitted?

(1) A person who wishes to introduce oxygen, and any necessary supplemental substances, into soil or groundwater to enhance aerobic biodegradation of pollution must register under this general permit for this activity to be authorized.

(2) A permittee must submit a renewal of the registration within 180 days before the expiration date of any current Certificate of Coverage or Approval of Registration if they wish to continue to introduce oxygen into soil or groundwater under the authority of the general permit. The same form should be used for either a new registration or renewal of an existing registration.

Note: A permittee must submit a new registration if there will be significant changes in the type of activity or nature of oxygenating substances introduced.

What must I submit to register?

A person ("registrant") must submit to DEEP a *complete* registration form with the appropriate fee, a Permit Application Transmittal Form, supporting documents, and certifications, including any optional LEP or P.E. Certification for Site Conditions. The required supporting documents include a location map, a site characterization report, a site plan, a work plan, and may also include a monitoring plan, access permissions, and other documents.

Is a new registration always required when I want to change my authorized activities?

No, if a permittee wants to change the operations, the area of activity, or the quantities of the substances introduced by implementing additional phases of activity not significantly different from what has been authorized, the permittee may submit a modified work plan for DEEP approval.

DEEP Response

How do I know my registration has been accepted by DEEP and my actions are authorized?

DEEP will, in most circumstances, issue either an Approval of Registration or a Certificate of Coverage, as confirmation that the actions proposed in the

registration are authorized. (See Section 3(e) of the general permit; and also Figure 1.) Note that there is one limited provision for self-implementation upon registration, without any response from DEEP, provided in Section 3(e)(3) of the general permit and discussed above (see “Authorization of Activity”) and also below in this fact sheet.

How is an Approval of Registration obtained for an activity?

When the proposed activity requires specific DEEP approval and no *optional* Certification for Site Conditions is permissible or provided, the commissioner will issue a decision regarding the registration after departmental review. The decision may be an Approval of Registration (with or without conditions), or a rejection or disapproval.

What is a Certification for Site Conditions?

A Certification for Site Conditions is an *optional* certification prepared by a Professional Engineer (P.E.) or Licensed Environmental Professional (LEP) that is submitted by a registrant. It documents the professional’s opinion that the proposed activity is appropriate and necessary and is based on an appropriate site characterization; that the activity design and implementation plan is consistent with prevailing standards; that implementation is not expected to affect water quality beyond the zone of influence; and that monitoring will ensure any adverse effects are minimized and managed appropriately. To expedite authorization of an eligible activity, the commissioner may rely on the Certification for Site Conditions to issue a Certificate of Coverage in lieu of an Approval of Registration that might otherwise be required when certain site conditions exist. (See Sections 3(e)(2) and 4(c)(4)(C) of the general permit; and also Figure 1.)

What is a Certificate of Coverage, and how do I obtain one?

A Certificate of Coverage is a document provided by DEEP acknowledging that a complete registration under this general permit has been submitted, and the proposed activity is authorized as provided in the general permit. It is issued when the proposed activity either requires no specific DEEP approval, or when an activity otherwise requiring a DEEP approval due to certain site conditions has been *optionally* certified as appropriate and necessary by a LEP or P.E. through submittal of a Certification for Site Conditions when such submittal is permissible under Section 3(e)(2) of the general permit.

Are there any circumstances when I can begin activity upon submittal of a registration, without any response from DEEP?

Introduction of oxygen releasing substances supplying less than 150 pounds of oxygen into an open excavation associated with remediating a release from a tank with a capacity of less than 2,100 gallons used to store heating oil is authorized when a complete registration is received by DEEP; *provided that*, if DEEP approval of registration is needed due to presence of certain site conditions (see Section 3(e)(3)(ii) of the general permit), a permissible and *optional* Certification for Site Conditions is included with the registration. If the proposed activity is within an area where bedrock or a public water supply may be affected an approval is **required** and activities may not commence

prior to approval, as mandated in Section 3(e)(1)(A) of the general permit.

Is a Certificate of Coverage or an Approval of Registration transferable?

A permittee may transfer a Certificate of Coverage or an Approval of Registration to another person. If a transfer to a new person is required, the parties must complete a DEEP permit transfer form and submit it with the applicable fee. In addition, if the certifying LEP or P.E. changes with the transfer, the new LEP or P.E. must provide a certification for site conditions in supplement to any certification submitted in support of the original registration.

Fees

How much does it cost to register an activity?

Fees vary based on the level of DEEP review (see Section 4(c)(1) of the general permit and Figure 2.):

- For introduction of oxygen releasing substances into an open excavation associated with remediation of a release from a tank with a capacity of less than 2,100 gallons used to store heating oil:
 - if approval of registration is required (base fee) \$1,000.00
 - if approval is not required, or if Certification for Site Conditions is permissible and submitted * \$500.00
- For activity associated with in situ remediation of pollution by introducing less than 150 pounds of oxygen for enhancement of aerobic biodegradation at any site with solely a *heating oil release* from a tank with less than 2,100 gallon capacity:
 - if approval of registration is required (base fee) \$2,000.00
 - if approval is not required, or if Certification for Site Conditions is permissible and submitted * \$1,000.00
- For activity associated with in situ remediation of petroleum fuel pollution by enhancement of aerobic biodegradation at a *supervised remediation site* (as defined in the general permit):
 - if approval of registration is required (base fee) \$2,000.00
 - if approval is not required, or if Certification for Site Conditions is permissible and submitted * \$1,000.00
- For other activity pursuant to the general permit, including activity at sites not in remedial programs or not included as heating oil sites above, and for any activity to remediate pollution other than by petroleum fuel, the base fee is: \$4,000.00

Notes regarding fees: (* reduction from base fee)

- The fee for municipalities is fifty percent (50%) of the fee listed above.
- Registration fees are non-refundable.
- Registration fees may be waived for activity associated with remediating pollution originating at single family residences.

Permit Duration

The *General Permit for In Situ Groundwater Remediation: Enhanced Aerobic Biodegradation* is valid for a period of ten (10) years after the date of issuance.

There is no specific limit on the duration of any individual authorized activity however the Commissioner may impose a limit as a condition of approval of registration.

Contact Address

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This overview is designed to answer general questions and provide basic information. You should refer to the appropriate statutes and regulations for the specific regulatory language of the different permit programs. This document should not be relied upon to determine whether or not an environmental permit is required. It is your responsibility to ensure that all required permits have been obtained.

Figure 1. *Authorization Process*. Refer to Section 4 of the general permit for additional detail.

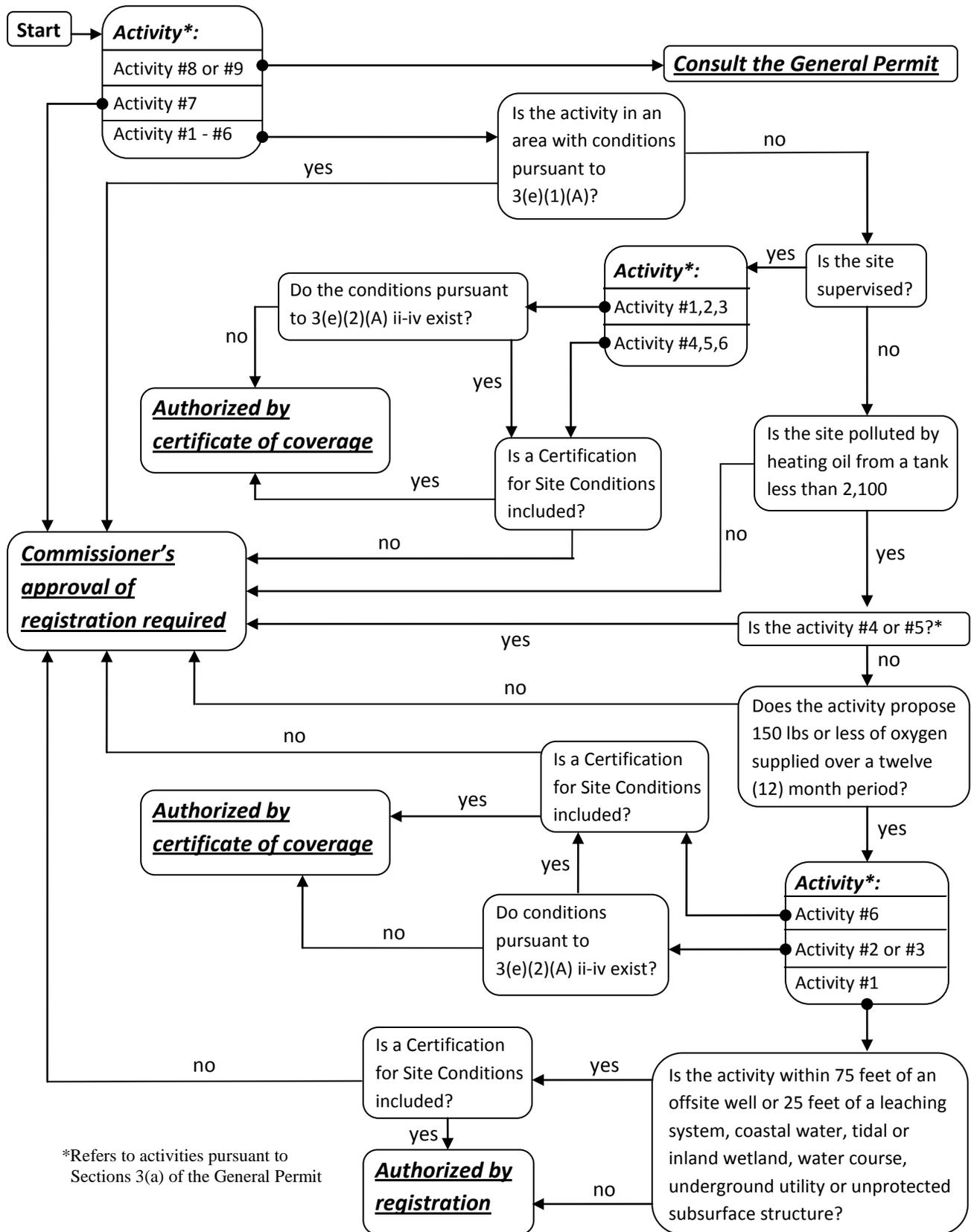
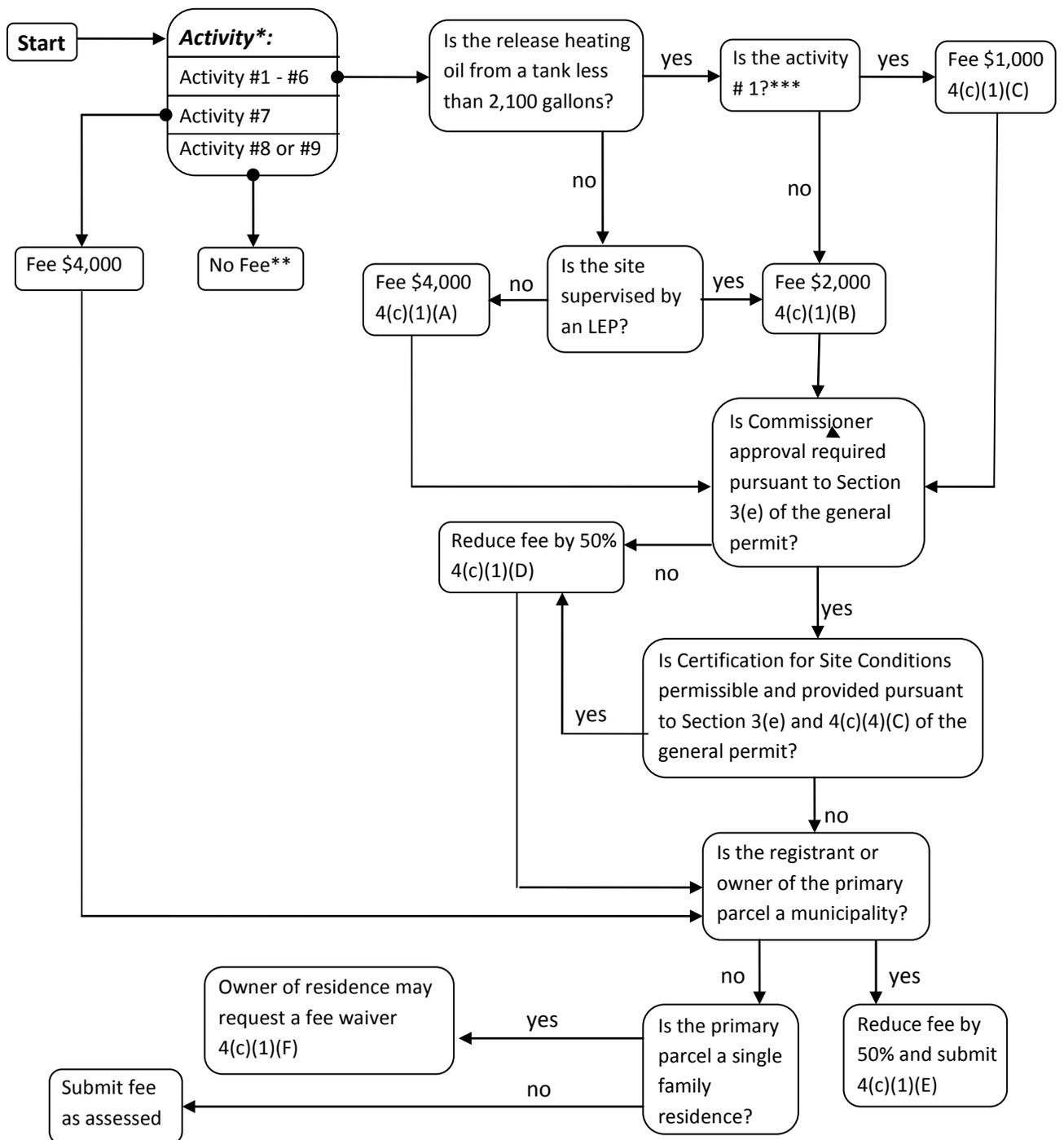


Figure 2: **Fee Determination**. Consult Section 4(c)(1) of the general permit for specifics.

Please note that *fees may be waived* for any proposed activity addressing pollution originating from a *single family residence*. The owner of the residence must specifically request a fee waiver.



*Refers to activities pursuant to Sections 3(a) of the General Permit

**No fee applies when the supplemental or incidental activity is at a site with an existing authorization under the General Permit

***Refers to any activity pursuant to Section 3(a)(1) of the General Permit