

Overview of the Massachusetts Glyphosate Commission's Activities

History

"This Commission was established by the legislature to conduct a scientific review of the potential impacts of glyphosate and its most common alternative herbicides on the environment and public health, including a review, undertaken in collaboration with the natural heritage and endangered species program, of the potential impacts of glyphosate and most common alternative herbicides. Members of the Commission include the Commissioner of MassDEP (chair); the Commissioner of Massachusetts Department of Agricultural Resources; the Commissioner of the Department of Public Health; the Director of the Division of Fish and Game; and a representative of a Land Trust Organization appointed by the legislature....

to determine whether current uses of glyphosate pose unreasonable adverse effects to the environment, and whether current registered uses of glyphosate should be altered or suspended; provided further, that the department shall submit the results of both the scientific review and individual review to the joint committee on environment, natural resources and agriculture no later than December 31, 2021;"

<https://www.mass.gov/service-details/glyphosate-commission>

Deliverables

Phase One: identifying all resources to consider for the scientific review

Phase Two: collects, researches, and reviews resources identified in phase one

Timeline

Initial Legislative action called for a report deadline December 31st, 2021

Phase One Completed June 2022

Phase Two Estimated: six months from funding discussed at September 2022 meeting

Budget

Total current allocation for total project cost: \$186,700

Status

The funding for phase two was secured and phase two has started. Additional funding was added to the budget to accommodate the additional work generated from public comment. Two accompanying documents share the process the commission has undergone. The first five pages of the RFP document show the commission's plan for this investigation and the Phase One document shows what the contractor discovered for information sources to include in Phase Two. The Phase Two report is due mid-spring 2023.

THE COMMONWEALTH OF MASSACHUSETTS

**EXECUTIVE OFFICE OF ENERGY AND
ENVIRONMENTAL AFFAIRS -**

**MASSACHUSETTS DEPARTMENT OF
AGRICULTURAL RESOURCES**

251 CAUSEWAY STREET, SUITE 500
BOSTON, MA 02114-2151



**Statewide Contract PRF61:
Management Consultants, Program Coordinators & Planners Services
Category: Environmental Consulting Services**

Request for Quote (RFQ)

**Document Title: Glyphosate Scientific Review
Document Number: AGR-GlyphosateStudy-FY22**

Responses will be received online, via COMMBUYS through December 29, 2021, at 11 AM.



Massachusetts Department of Agricultural Resources- MDAR
Request for Quote

Issue Date:	December 13, 2021
Purchasing Department	Department of Agricultural Resources
Address	251 Causeway Street, Suite 500
City, State Zip Code	Boston, MA 02114-2151
RFR Name/Title	Glyphosate Scientific Review
RFR Number	AGR-GlyphostateStudy-FY22

1. Description or Purpose of Procurement:

The Massachusetts Department of Agricultural Resources (“MDAR”), on behalf of the Glyphosate Commission (“Commission”) established by FY2022 budget line item 2511-0100 (“Budget Line Item”), seeks applicants to conduct a scientific review on the potential public health and ecological effects of glyphosate. **The Commission is working with a very tight timeline as required by the budget line item; an initial Report shall be submitted to the Commission three weeks after the start of the contract, and a final Report and presentation on the Report and findings must be submitted to the Commission no later than March 1, 2022.**

Massachusetts regulates pesticides through M.G.L. c. 132B, the Massachusetts Pesticide Control Act (“Act”). This law, enacted in 1978, places the power of pesticide regulation with MDAR. MDAR has authority to promulgate regulations under its authority set forth in the Act, which can be found at 333 CMR 2.00 through 14.00. . The Act also created a Pesticide Board Subcommittee, which is charged with registering pesticides in the Commonwealth in accordance with M.G.L. c. 132B, Section 7A. Pesticide registration requirements include ecological risk assessments to ensure that the intended use will not cause unreasonable adverse effects on the environment.

The Budget Line Item created the Commission and authorized it to conduct a scientific review of the potential impacts of glyphosate and its most common alternative herbicides on the environment and public health. The legislature also stipulated that “pesticide subcommittee established under section 3A of chapter 132B of the General Laws shall use said scientific review as part of an individual conducted under 333 C.M.R 8.03 to determine chapter 132B of the General Laws to determine whether current uses of glyphosate pose unreasonable adverse effects to the environment, and whether current registered uses of glyphosate should be altered or suspended.”

Scope

The Commission is seeking proposals from contractors to conduct a scientific review of the potential impacts of glyphosate and its most common alternative herbicides on the environment and public health. This review must be undertaken in collaboration with the Massachusetts Natural Heritage and Endangered Species Program to evaluate the potential impacts of glyphosate and most common alternative herbicides on:

- (i) all species of plants and animals that have been determined to be endangered, threatened, or of special concern pursuant to chapter 131A of the General Laws; and
- (ii) all significant habitats designated pursuant to said chapter 131A; provided further, that the commission may expend any portion of its funds it deems necessary to enable the collaboration of the natural heritage and endangered species program

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Deliverables (Phase 1)

- Complete an initial report consisting of the following:
 1. a summary of available information on the use of glyphosate in the Commonwealth and key herbicide agent alternatives (e.g., pelargonic acid; glufasinate); this should identify and summarize use restrictions and requirements to minimize impacts.
 2. a list of key assessments (e.g., recent assessments by recognized authorities including, for example, USEPA; peer reviewed publications; precedential judicial decisions), of the potential public health and environmental impacts of glyphosate and its alternatives; and
 3. a list of key stakeholders to be consulted (for example, NAISMA).
- The initial report will be provided to the Commission **three weeks after the start of the contract** and will serve to inform elements to be included in the final report. The Commission will review and affirm the submission to be used to complete the tasks below and may suggest additions.

Deliverable (Phase 2)

- Detailed assessment of the use of glyphosate in the Commonwealth, including methodologies (how) and rationale for use (why), and its key herbicide agent alternatives informed by the Phase 1 deliverable described above. Alternatives should also include discussion of non-pesticide methods of vegetation control (e.g., mechanical methods). The summary of uses should include a review of the effectiveness, application methods and other approaches to avoid or minimize impacts.
- In consultation with the Massachusetts Natural Heritage and Endangered Species Program, summarize the potential impacts of glyphosate and alternative herbicide agents on species determined to be endangered, threatened or of special concern and significant habitats, or habitats of concern.
- Identify and collect regulatory assessments, peer-reviewed scientific publications and other sources of information and data on glyphosate and alternative agents.
- Review, analyze and summarize key assessments, such as recent assessments by recognized authorities (e.g., USEPA), publications in the peer reviewed literature; and precedential judicial decisions) informed by the Phase 1 deliverable.
- Summarize legislation, regulations, and other management requirements for these herbicides by federal agencies, New England states, and any state implementing new management techniques or programs. Summarize key findings of fact from precedential judicial decisions.
- Compare potential public health and environmental impacts of glyphosate and alternative herbicide Agents based on key assessments, informed by the Phase 1 deliverable, and addressed under (4) above.
- Consult with other State, local, and national agencies as well as stakeholder groups identified or informed by the Phase 1 deliverable, on data and information collection.
- Consult and collaborate with the Commission and its support staff on the development of review documents.

Deliverables (Final)

- Develop a report on the review of studies and information collected as noted above. A presentation of the Report will be made to the Commission **no later than March 1, 2022**.

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2. Applicable Procurement Law

Check :	Type of Purchase	Executive Branch Goods & Services- Applicable Laws
<input checked="" type="checkbox"/>	Goods and Services	MGL c. 7, § 22; c. 30, § 51, § 52; 801 CMR 21.00

3. Acquisition Method:

Check All Applicable:	Category
<input checked="" type="checkbox"/>	Fee-For-Service

4. Bid Calendar Type:

Check	Type	Description
<input checked="" type="checkbox"/>	Standard	Procurement will not be reopened after the Bid Opening Date (Response deadline date)

5. Whether Single or Multiple Contractors are Required for Contract:

Check	Number of Contractors		
<input checked="" type="checkbox"/>	Single Contractor	Target Number of Contracts	One Contract will be Awarded

6. Entities Eligible to Use the Resulting Contract

Check	Limited User Contract- Eligible Entities/Agencies
<input checked="" type="checkbox"/>	Restricted to Use by Defined Entities Only: <ul style="list-style-type: none"> • MDAR- Department of Agricultural Services and MDEP-Department of Environmental Protection

7. Expected Duration of Contract (Initial Duration and any Options to Renew):

Contract Duration	Number of Options	Number of Years/Months
Contract Duration		<u>Contract Effective Date through June 30, 2022</u>
Final Deliverable Due		<u>Study must be submitted by March 1, 2022</u>

8. Anticipated Expenditures, Funding or Compensation:

Check:	Compensation Type
<input type="checkbox"/>	Maximum Obligation Contract
<input checked="" type="checkbox"/>	Rate Contract- Contract will NOT have a Maximum Obligation

The funding for any contract is at least \$50,000. Additional funds may be made available.

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9. Contract Performance and Business Specifications:

Work Requirements

- Summarize the use of glyphosate and its key herbicide alternatives agents in MA.
- In consultation with the MA natural heritage and endangered species program, summarize the potential impacts of glyphosate and alternative herbicide agents on species determined to be endangered, threatened or of special concern and significant habitats.
- Consult with MDAR relative to the pesticide laws and regulations that pertain to pesticides and pesticide product registration.
- Consult with any other state agency which the contractor feels necessary.
- Collect, review, and analyze to the extent feasible key regulatory and peer-reviewed scientific information and data on these agents.
- Summarize legislation, regulations, and other management requirements for these herbicides by federal agencies and key states.
- Identify other publications and assessments.
- Prepare a qualitative comparison of potential public health and environmental impacts of these agents based on key assessments.
- Consult with other State, local, and national agencies as well as stakeholder groups on data and information collection.
- Consult and collaborate with the Commission and its support staff on the development of review documents.
- Develop reports and summaries on the review of studies and information collected.
- Attend the Commission meetings.
- Present the final review to the Commission.
- Present the final review to the Pesticide Board Subcommittee.
- Report must be submitted to the Department **no later March 1, 2022.**

Minimum Qualifications Required

- Ability to collect, review, evaluate and synthesize summaries of knowledge, information, data related to toxicity and risks of certain pesticides.
- Ability to compose relevant reports and related documents.
- Ability to effectively communicate in writing and orally.
- Ability to read, understand, and relay scientific information in the context of a pesticide regulatory program.
- Experience in scientific writing and communication

Preferred Qualifications

- Graduate degree in Ecology, Toxicology, Environmental Science, Entomology, or related fields.
- Experience or knowledge of ecological risk assessment
- Knowledge of federal and state pesticide regulation and supporting risk assessment procedures
- Research and Field experience in a biological or ecological setting.

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10. Small Business Purchasing Program

Check	Size of Procurement Annually	SDP Commitment
<input checked="" type="checkbox"/>	Small Procurement (<= \$250,000)	SBPP section applies to this Procurement
<input type="checkbox"/>	Large Procurement (> \$250,000)	SBPP section does not apply to this Procurement

Program Background: The Massachusetts [Small Business Purchasing Program](#) (SBPP) was established pursuant to [Executive Order 523](#) to increase state contracting opportunities with small businesses having their principal place of business within the Commonwealth of Massachusetts. Pursuant to the SBPP, it is the intention of the issuing department to award this Small Procurement to one or more SBPP participating business(es) as described below.

SBPP Award Preference: While all businesses, no matter the size or principal place of business, may submit responses to this solicitation, should an SBPP participant respond and meet the best value criteria as described in this solicitation, the SBPP participant shall be awarded the contract. The Strategic Sourcing Services Team (SSST) will not evaluate submissions from non-SBPP participants unless no SBPP Bidder meets the SSST's best value evaluation criteria.

SBPP Participation Eligibility: To be eligible to participate in this procurement as an SBPP participant, an entity must meet the following criteria, and be marked as an SBPP-registered business in [COMMBUYS](#):

1. Have its principal place of business in the Commonwealth of Massachusetts;
2. Been in business for at least one year;
3. Employ a combined total of 50 or fewer full-time equivalent employees in all locations, or employees work less than a combined total of 26,000 hours per quarter; and
4. Have gross revenues, as reported on appropriate tax forms, of \$15 million or less, based on a three-year average.

Non-profit firms also must be registered as a non-profit or charitable organization with the MA Attorney General's Office and be up to date with all filings required by that office and be tax exempt under Section 501(c) of the Internal Revenue Code.

SBPP Compliance Requirements: It is the responsibility of the Bidder to ensure that their SBPP status is current at the time of submitting a response and throughout the life of any resulting contract. Misrepresentation of SBPP status will result in disqualification from consideration, and may result in debarment, contract termination, and other actions. To learn more about the SBPP, including how to apply, visit the [SBPP Webpage](#).

Program Resources and Assistance: Bidders and Contractors seeking assistance regarding SBPP may visit the SBPP webpage, <http://www.mass.gov/sbpp>, or contact the SBPP Help Desk at sbpp@mass.gov.

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11. Supplier Diversity Plan

Check	Size of Procurement Annually	SDP Commitment
<input checked="" type="checkbox"/>	Small Procurement (<= \$250,000)	Submission is NOT required for this Procurement
<input type="checkbox"/>	Large Procurement (> \$250,000)	Submission is MANDATORY for Procurements with estimated annual values exceeding \$250,000

Supplier Diversity Plan is not required for this Procurement

12. Environmentally Preferable Products

Products and services purchased by state agencies must be in compliance with [Executive Order 515](#), issued October 27, 2009. Under this Executive Order, Executive Departments are required to reduce their impact on the environment and enhance public health by procuring environmentally preferable products and services (EPPs) whenever such products and services perform to satisfactory standards and represent best value, consistent with 801 CMR 21.00. In line with this directive, all Contracts, whether departmental or statewide, must comply with the specifications and guidelines established by OSD and the EPP Program. EPPs are products and services that help to conserve natural resources, reduce waste, protect public health and the environment, and promote the use of clean technologies, recycled materials, and less toxic products. Bid responses must identify how a contractor meets these goals.

13. Environmental Justice Policy

For the purposes of this RFQ, “Environmental Justice” is defined as the equal protection and meaningful involvement of all people and communities with respect to the development, implementation, and enforcement of energy, climate change, and environmental laws, regulations, and policies and the equitable distribution of energy and environmental benefits and burdens. Environmental Justice is based on the principle that all people have a right to be protected from environmental hazards and to live in and enjoy a clean and healthful environment regardless of race, color, national origin, income or English language proficiency.

“Environmental Justice Population” is defined by the Environmental Justice Policy, issued by the Massachusetts Executive Office of Energy and Environmental Affairs in 2017, as neighborhoods where one or more of the following criteria are met:

- Annual median household income equal to or less than 65 percent of the statewide median
- 25% of its population is minority; or
- 25% or more of the residents have English Isolation.

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14. Evaluation Criteria

Contractors must submit responses that meet all the submission requirements of the RFQ. Only responsive proposals that meet the submission requirements will be evaluated, scored and ranked by the evaluation team according to the evaluation criteria. Additional information may be requested for evaluation purposes.

General Evaluation: The Department will consider no responses received after the deadline. The Department will award Contracts to the most responsive bidder(s) that offers the best value. The fulfillment of the qualifications listed in this RFQ, the completion of all required forms as listed in the RFQ, and a determination by the Department that contracting with the bidder will provide the “best value” to the Commonwealth will determine the basis for evaluation. In making this determination, the Department will consider and score a number of factors including price, experience, geographic location for ease of service, and quality. The Department may disqualify Responses that are incomplete or inaccurate at its own discretion.

15. Instructions for Submission of Responses:

Only electronic quotes submitted via COMMBUYS will be accepted in response to this RFQ. Responses must be sent via the “Create Quote” functionality in COMMBUYS. For instructions concerning how to submit a Quote, please see Appendix B.

Any submission which fails to meet the submission requirements of the RFQ will be found non-responsive without further evaluation unless the evaluation team, at its discretion, determines that the non-compliance is insubstantial and can be corrected. In these cases, the evaluation team may allow the vendor to make minor corrections to the submission.

COMMBUYS Submission Instructions:

Include at a minimum the following with your submission:

- Company/Vendor overview and credentials.
- Methodology/Approach of the project
- Quote for Project or rates- Include any additional rates if applicable.
- Sample report
- Confirmation you can meet the report deadline. (If not, provide closest completion date)

All terms, conditions, requirements, and procedures included in this RFQ must be met for a Response to be determined responsive. If a Respondent fails to meet any material term, condition, requirement or procedure, its Response may be deemed unresponsive and disqualified. The Department reserves the right to request additional information from a Respondent to clarify their response to this RFQ, provided that, in the Department's view, any such opportunity to provide further information does not prejudice the interests of the other Respondents.

Note: Prices submitted by the vendor will be set for the full duration of the Initial Contract. Any change in pricing will be submitted and approved in advance by the Department upon each renewal option.

Additional Invasives or services may be agreed upon and added at time of renewal, or mid agreement, via a contract amendment.

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16. Estimated Procurement Calendar

Procurement Activity	Date
Original Release of this RFR/RFQ/Bid:	December 16, 2021
Amended RFR Document Released:	NA
Application Due Date: (COMMBUYS Bid Opening Date)	December 29, 2021, 11AM
Estimated Contract Start Date:	Estimated- January 3, 2022

**Bidders are required to monitor COMMBUYS for changes to the procurement calendar for this Bid.*

a. COMMBUYS Online Questions (Bid Q&A):

Written Questions must be entered using the “Bid Q&A” tab for the Bid in COMMBUYS no later than the “Online Questions Due” date and time indicated in the Estimated Procurement Calendar (above). The issuing department reserves the right to not respond to questions submitted after this date. It is the Bidder’s responsibility to verify receipt of questions.

It is the responsibility of the prospective Bidder and awarded Contractor to maintain an active registration in COMMBUYS and to keep current the email address of the Bidder’s contact person and prospective contract manager, if awarded a contract, and to monitor that email inbox for communications from the Purchasing Department, including requests for clarification. The Purchasing Department and the Commonwealth assume no responsibility if a prospective Bidder’s/awarded Contractor’s designated email address is not current, or if technical problems, including those with the prospective Bidder’s/awarded Contractor’s computer, network, or internet service provider (ISP) cause email communications sent to/from the prospective Bidder/Awarded contractor and the Purchasing Department to be lost or rejected by any means including email or spam filtering.

Written Responses to Questions will be released on or about the “Responses to Questions Posted Online” date indicated in the Estimated Procurement Calendar (above). Written questions and responses will be posted on the Bid Q&A Tab for this Bid in COMMBUYS.)

Required RFQ Attachments Included:

Appendix A: Required Specifications

Appendix B: COMMBUYS Electronic Quote Submission Instructions

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RFQ Attachments

Appendix A: Required Specifications

RFQ - Required Specifications for Commodities and Services

Revision Date: October 5, 2021

In general, most of the required contractual stipulations are referenced in the *Standard Contract Form and Instructions* and the *Commonwealth Terms and Conditions*. However, the following RFQ provisions must appear in all Commonwealth competitive procurements conducted under 801 CMR 21.00.

The terms of *801 CMR 21.00: Procurement of Commodities and Services* are incorporated by reference into this RFQ. Words used in this RFQ shall have the meanings defined in 801 CMR 21.00. Additional definitions also may be identified in this RFQ. Other terms not defined elsewhere in this document may be defined in OSD's [Glossary of Terms](#). Unless otherwise specified in this RFQ, all communications, responses, and documentation must be in English, all measurements must be provided in feet, inches, and pounds and all cost proposals or figures in U.S. currency. All responses must be submitted in accordance with the specific terms of this RFQ.

1. COMMBUYS Market Center. COMMBUYS is the official source of information for this Bid and is publicly accessible at no charge at www.commbuys.com. Information contained in this document and in COMMBUYS, including file attachments, and information contained in the related Bid Questions and Answers (Q&A), are components of the Bid, as referenced in COMMBUYS, and are incorporated into the Bid and any resulting contract.

Bidders are solely responsible for obtaining all information distributed for this Bid via COMMBUYS. Bid Q&A supports Bidder submission of written questions associated with a Bid and publication of official answers.

It is each Bidder's responsibility to check COMMBUYS for:

- Any amendments, addenda, or modifications to this Bid, and
- Any Bid Q&A records related to this Bid.

The Commonwealth accepts no responsibility and will provide no accommodation to Bidders who submit a Quote based on an out-of-date Bid or on information received from a source other than COMMBUYS.

2. COMMBUYS Registration. Bidders may elect to register for a free COMMBUYS Seller account which provides value-added features, including automated email notification associated with postings and modifications to COMMBUYS records. However, to respond to a Bid, Bidders must register and maintain an active COMMBUYS Seller account.

All Bidders submitting a Quote (previously referred to as Response) in response to this Bid (previously referred to as Solicitation) agree that, if awarded a contract: 1) they will maintain an active seller account in COMMBUYS; 2) they will, when directed to do so by the procuring entity, activate and maintain a COMMBUYS-enabled catalog using Commonwealth Commodity Codes; 3) they will comply with all requests by the procuring entity to utilize COMMBUYS for the purposes of conducting all aspects of purchasing and invoicing with the Commonwealth, as added functionality for the COMMBUYS system is activated; and 4) in the event the Commonwealth adopts an alternate e-procurement platform, successful Bidders will be required to utilize such system, as directed by the procuring entity. Commonwealth Commodity Codes are based on the United Nations Standard Products and Services Code (UNSPSC).

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COMMBUYS uses terminology with which bidders must be familiar to conduct business with the Commonwealth. To view this terminology and to learn more about COMMBUYS, please visit the [Learn about COMMBUYS Resources page on mass.gov](#).

3. Multiple Quotes. Bidders may not submit Multiple Quotes in response to a Bid unless the RFQ authorizes them to do so. If a Bidder submits multiple quotes in response to an RFQ that does not authorize multiple responses, only the latest dated quote submitted prior to the bid opening date will be evaluated.

4. Quote Content. Bid specifications for delivery, shipping, billing, and payment will prevail over any proposed Bidder terms entered as part of the Quote, unless otherwise specified in the Bid.

5. Supplier Diversity Office (SDO) Programs. Pursuant to Executive Orders [523](#) and [565](#), the Commonwealth supports the use of diverse and small businesses through the Small Business Purchasing Program (SBPP) and the Supplier Diversity Program (SDP). Based on the estimated value of the procurement, one of the above-mentioned programs shall be applicable to this RFQ. For more information on the program that applies to this solicitation, see the body of this RFQ.

6. Small Business Purchasing Program (SBPP)

Program Background. The Massachusetts [Small Business Purchasing Program](#) (SBPP) was established pursuant to [Executive Order 523](#) to increase state contracting opportunities with small businesses having their principal place of business within the Commonwealth of Massachusetts. Pursuant to the SBPP, it is the intention of the issuing department to award this Small Procurement to one or more SBPP participating business(es) as described below.

SBPP Award Preference. While all businesses, no matter the size or principal place of business, may submit responses to this solicitation, should an SBPP participant respond and meet the best value criteria described in this solicitation, the SBPP participant shall be awarded the contract. The Strategic Sourcing Services Team (SST) will not evaluate submissions from non-SBPP participants unless no SBPP Bidder meets the SSST's best value evaluation criteria.

SBPP Participation Eligibility. To be eligible to participate in this procurement as an SBPP participant, an entity must meet the following criteria, and be marked as an SBPP-registered business in [COMMBUYS](#):

5. Have its principal place of business in the Commonwealth of Massachusetts;
6. Been in business for at least one year;
7. Employ a combined total of 50 or fewer full-time equivalent employees in all locations, or employees work less than a combined total of 26,000 hours per quarter; and
8. Have gross revenues, as reported on appropriate tax forms, of \$15 million or less, based on a three-year average.

Non-profit firms also must be registered as a non-profit or charitable organization with the MA Attorney General's Office and be up to date with all filings required by that office and be tax exempt under Section 501(c) of the Internal Revenue Code.

SBPP Compliance Requirements. It is the responsibility of the Bidder to ensure that their SBPP status is current at the time of submitting a response and throughout the life of any resulting contract. Misrepresentation of SBPP status will result in disqualification from consideration, and may result in debarment, contract termination, and other actions. To learn more about the SBPP, including how to apply, visit the SBPP webpage, <http://www.mass.gov/sbpp>.

Program Resources and Assistance. Bidders and Contractors seeking assistance regarding SBPP may visit the [SBPP Webpage](#), or contact the SBPP Help Desk at sbpp@mass.gov.

7. Supplier Diversity Program (SDP)

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Program Background. Pursuant to [Executive Order 565](#), the Commonwealth's [Supplier Diversity Program](#) (SDP) promotes business-to-business relationships between awarded Contractors and diverse businesses and non-profit organizations ("SDP Partners") certified or recognized (see below for more information) by the [Supplier Diversity Office \(SDO\)](#).

Financial Commitment Requirements. All Bidders responding to this solicitation are required to make a significant financial commitment ("SDP Commitment") to partnering with one or more SDO-certified or recognized diverse business enterprise(s) or non-profit organization(s). This SDP Commitment must be expressed as a percentage of contract sales resulting from this solicitation that would be spent with the SDP Partner(s).

After contract award (if any), the Total SDP Commitment shall become a contractual requirement to be met annually on a Massachusetts fiscal year basis (July 1 – June 30) for the duration of the contract. The minimum acceptable Total SDP Commitment in response to this solicitation shall be 1%. Bidders shall be awarded additional evaluation points for higher SDP Commitments.

No contract shall be awarded to a Bidder without an SDP Commitment that meets the requirements stated herein. This requirement extends to **all** Bidders regardless of their own supplier diversity certification.

Eligible SDP Partner Certification Categories

SDP Partners must be business enterprises and/or non-profit organizations certified or recognized by the SDO in one or more of the following certification categories:

- Minority-Owned Business Enterprise (MBE)
- Minority Non-Profit Organization (M/NPO)
- Women-Owned Business Enterprise (WBE)
- Women Non-Profit Organization (W/NPO)
- Veteran-Owned Business Enterprise (VBE)
- Service-Disabled Veteran-Owned Business Enterprise (SDVOBE)
- Disability-Owned Business Enterprise (DOBE)
- Lesbian, Gay, Bisexual, and Transgender Business Enterprise (LBGTBE)

Eligible Types of Business-to-Business Relationships. Bidders and Contractors may engage SDP Partners as follows:

- **Subcontracting**, defined as a partnership in which the SDP partner is involved in the provision of products and/or services to the Commonwealth.
- **Ancillary Products and Services**, defined as a business relationship in which the SDP partner provides products or services that are not directly related to the Contractor's contract with the Commonwealth but may be related to the Contractor's own operational needs.

Other types of business-to-business relationships are not acceptable under this contract. All provisions of this RFQ applicable to subcontracting shall apply equally to the engagement of SDP Partners as subcontractors.

Program Flexibility. The SDP encompasses the following provisions to support Bidders in establishing and maintaining sustainable business-to-business relationships meeting their needs:

- SDP Partners are **not** required to be subcontractors.
- SDP Partners are **not** required to be Massachusetts-based businesses.
- SDP Partners **may be changed or added** during the term of the contract, provided the Contractor continues to meet its SDP Commitment.

SDP Plan Form Requirements. All Bidders must complete the SDP Plan Form included in this solicitation and attach it to their bid response. In addition to proposing an SDP Commitment, each Bidder must propose one or more SDP Partner(s) to utilize to meet its SDP Commitment. Certified diverse Bidders may not list their own companies, their

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subsidiaries, or affiliates as SDP Partners and may not meet their SDP Commitment by spending funds internally or with their own subsidiaries or affiliates.

Bidders may propose SDP Partners that are:

- **Certified or recognized by the SDO:** Such partners appear in the [SDO Directory of Certified Businesses](#) or in the [U.S. Dept of Veterans Affairs VetBiz Vendor Information Pages](#) directory. After contract award (if any), spending with such partners will contribute to meeting the Contractor's SDP Commitment.
- **Not yet certified or recognized by the SDO:** Such partners must be certified in eligible categories by a third-party certification body, such as another city or state supplier diversity certification office, the [National Minority Supplier Development Council](#), the [Women Business Enterprise National Council](#), [Disability: IN](#), or the [National LGBT Chamber of Commerce \(NGLCC\)](#), but are not listed in the above-mentioned directories. Self-certification is not acceptable. While Bidders may list such proposed SDP Partners on their SDP Plans, spending with such partners will not contribute to meeting the Contractor's SDP Commitment unless they apply for and are granted SDO supplier diversity certification or recognition. If proposed SDP Partners do not receive SDO supplier diversity certification or recognition, the Contractor must find alternative SDP Partners to meet the SDP Commitment.

It is the responsibility of the Contractor to ensure that their proposed SDP Partners obtain such certification or recognition by the SDO after contract award (if any). The issuing department and the SDO will not conduct outreach to proposed SDP Partners to ensure their certification. Furthermore, no guarantee may be made that a proposed SDP Partner will be certified, or regarding the time it may take to process a proposed SDP Partner certification. Contractors may direct partners to the SDO's homepage, www.mass.gov/sdo and the [Certification Self-Assessment Tool](#) for guidance on applying for certification.

It is **desirable** for Bidders to provide an SDP Focus Statement that describe the bidder's overall approach to increasing the participation of diverse businesses in the provision of products and services under this proposal/contract (subcontracting) and in the Bidder's general business operations (ancillary products and services). Such a description may include but not be limited to:

- A clearly stated purpose or goal.
- Specific types of diverse and small businesses targeted.
- Which departments/units within the business are responsible for implementing supplier diversity.
- Types of opportunities for which diverse and small businesses are considered.
- Specific measures/methods of engagement of diverse and small businesses.
- An existing internal supplier diversity policy.
- Public availability of the Bidder's supplier diversity policy.

It also is **desirable** for Bidders to use the SDP Plan Form to describe additional creative initiatives (if any) related to engaging, buying from, and/or collaborating with diverse businesses. Such initiatives may include but not be limited to:

- Serving as a mentor in a mentor-protégé relationship.
- Technical and financial assistance provided to diverse businesses.
- Participation in joint ventures between nondiverse and diverse businesses.
- Voluntary assistance programs by which nondiverse business employees are loaned to diverse businesses or by which diverse business employees are taken into viable business ventures to acquire training and experience in managing business affairs.

Evaluation of SDP Forms. To encourage Bidders to develop substantial supplier diversity initiatives and commitments as measures valuable to the Commonwealth, at least 25% of the total available evaluation points for this bid solicitation shall be allocated to the evaluation of the SDP Plan submissions. Because the purpose of the SDP is to promote business-to-business partnerships, the Bidders' workforce diversity initiatives will not be considered in the evaluation.

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SDP Spending Reports and Compliance. After contract award, Contractors shall be required to provide reports demonstrating compliance with the agreed-upon SDP Commitment as directed by the department, which in no case shall be less than annually.

Only spending with SDP Partners that appear in the [SDO Directory of Certified Businesses](#) or in the [U.S. Dept of Veterans Affairs VetBiz Vendor Information Pages](#) directory shall be counted toward a Contractor's compliance with their SDP Commitment. Spending with SDP Partners that do not appear in the directories above shall not be counted toward meeting a Contractor's SDP Commitment.

It is the responsibility of the Contractor to ensure they meet their SDP Commitment, and the SDO and the issuing department assume no responsibility for any Contractor's failure to meet its SDP Commitment.

SDP Spending Verification. The SDO and the contracting department reserve the right to contact SDP Partners at any time to request that they attest to the amounts reported to have been paid to them by the Contractor.

Program Resources and Assistance. Contractors seeking assistance in the development of their SDP Plans or identification of potential SDP Partners may visit the SDP webpage, www.mass.gov/sdp, or contact the SDP Help Desk at sdp@mass.gov.

8. Agricultural Products Preference (only applicable if this is a procurement for Agricultural Products). Chapter 123 of the Acts of 2006 directs the State Purchasing Agent to grant a preference to products of agriculture grown or produced using locally grown products. Such locally grown or produced products shall be purchased unless the price of the goods exceeds the price of products of agriculture from outside the Commonwealth by more than 10%. For purposes of this preference, products of agriculture are defined to include any agricultural, aquacultural, floricultural, or horticultural commodities; the growing and harvesting of forest products; the raising of livestock, including horses; raising of domesticated animals, bees, and/or fur-bearing animals; and any forestry or lumbering operations.

9. Best Value Selection and Negotiation. The Strategic Sourcing Services Team or SSST may select the response(s) which demonstrates the best value overall, including proposed alternatives that will achieve the procurement goals of the department. The SSST and a selected bidder, or a contractor, may negotiate a change in any element of contract performance or cost identified in the original RFQ or the selected bidder's or contractor's response which results in lower costs or a more cost effective or better value than was presented in the selected bidder's or contractor's original response.

10. Bidder Communication. Bidders are prohibited from communicating directly with any employee of the procuring department or any member of the SSST regarding this RFQ except as specified in this RFQ, and no other individual Commonwealth employee or representative is authorized to provide any information or respond to any question or inquiry concerning this RFQ. Bidders may contact the contact person for this RFQ in the event this RFQ is incomplete or the bidder is having trouble obtaining any required attachments electronically through COMMBUYS.

11. Contract Expansion. If additional funds become available during the contract duration period, the department reserves the right to increase the maximum obligation to some or all contracts executed as a result of this RFQ or to execute contracts with contractors not funded in the initial selection process, subject to available funding, satisfactory contract performance and service or commodity need.

12. Costs. Costs which are not specifically identified in the bidder's response and accepted by a department as part of a contract will not be compensated under any contract awarded pursuant to this RFQ. The Commonwealth will not be responsible for any costs or expenses incurred by bidders responding to this RFQ.

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13. Electronic Communication/Update of Bidder's/Contractor's Contact Information. It is the responsibility of the prospective bidder and awarded contractor to keep current on COMMBUYS the email address of the bidder's contact person and prospective contract manager, if awarded a contract, and to monitor that email inbox for communications from the SSST, including requests for clarification. The SSST and the Commonwealth assume no responsibility if a prospective bidder's/awarded contractor's designated email address is not current, or if technical problems, including those with the prospective bidder's/awarded contractor's computer, network, or internet service provider (ISP) cause email communications sent to/from the prospective bidder/awarded contractor and the SSST to be lost or rejected by any means including email or spam filtering.

14. Electronic Funds Transfer (EFT). All bidders responding to this RFQ must agree to participate in the Commonwealth Electronic Funds Transfer (EFT) program for receiving payments, unless the bidder is able to provide compelling proof that it would be unduly burdensome. EFT is a benefit to both contractors and the Commonwealth because it ensures fast, safe, and reliable payment directly to contractors and saves both parties the cost of processing checks. Contractors may track and verify payments made electronically through the Comptroller's [Vendor Web system](#). A link to the EFT application may be found on the [OSD Forms](#) page (www.mass.gov/lists/osd-forms). Additional information about EFT is available on the [VendorWeb](#) site (www.mass.gov/osc). Click on MASSfinance.

Successful bidders, upon notification of contract award, will be required to enroll in EFT as a contract requirement by completing and submitting the *Authorization for Electronic Funds Payment Form* to this department for review, approval, and forwarding to the Office of the Comptroller. If the bidder already is enrolled in the program, it may so indicate in its response. Because the *Authorization for Electronic Funds Payment Form* contains banking information, this form, and all information contained on this form, shall not be considered a public record and shall not be subject to public disclosure through a public records request.

The requirement to use EFT may be waived by the SSST on a case-by-case basis if participation in the program would be unduly burdensome on the bidder. If a bidder is claiming that this requirement is a hardship or unduly burdensome, the specific reason must be documented in its response. The SSST will consider such requests on a case-by-case basis and communicate the findings to the bidder.

15. Executive Order 509, Establishing Nutrition Standards for Food Purchased and Served by State Agencies. Food purchased and served by state agencies must be in compliance with Executive Order 509, issued in January 2009. Under this Executive Order, all contracts resulting from procurements posted after July 1, 2009, that involve the purchase and provision of food must comply with nutrition guidelines established by the Department of Public Health (DPH). The nutrition guidelines are available at the Department's website: [Tools and Resources for Implementation of Executive Order 509](#).

16. HIPAA: Business Associate Contractual Obligations. Bidders are notified that any department meeting the definition of a Covered Entity under the Health Insurance Portability and Accountability Act of 1996 (HIPAA) will include in the RFQ and resulting contract sufficient language establishing the successful bidder's contractual obligations, if any, that the department will require in order for the department to comply with HIPAA and the privacy and security regulations promulgated thereunder (45 CFR Parts 160, 162, and 164) (the Privacy and Security Rules). For example, if the department determines that the successful bidder is a business associate performing functions or activities involving protected health information, as such terms are used in the Privacy and Security Rules, then the department will include in the RFQ and resulting contract a sufficient description of business associate's contractual obligations regarding the privacy and security of the protected health information, as listed in 45 CFR 164.314 and 164.504 (e), including, but not limited to, the bidder's obligation to: implement administrative, physical, and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of the protected health information (in whatever form it is maintained or used, including verbal communications); provide individuals access to their records; and strictly limit use and disclosure of the protected health information for only those purposes approved by the department. Further, the department reserves the right to add any requirement during the course of the contract that it determines it must include in the contract in order for the department to comply with the Privacy and Security Rules. Please see other sections of the RFQ for any further HIPAA details, if applicable.

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17. Minimum Quote (Bid Response) Duration. Bidders Quotes made in response to this Bid must remain in effect for at least 90 days from the date of quote submission.

18. Prompt Payment Discounts (PPD). All bidders responding to this procurement must agree to offer discounts through participation in the Commonwealth's Prompt Payment Discount (PPD) initiative for receiving early and/or on-time payments, unless the bidder provides compelling proof that it would be unduly burdensome. PPD benefits both contractors and the Commonwealth. Contractors benefit by increased, usable cash flow as a result of fast and efficient payments for commodities or services rendered. Participation in the Electronic Funds Transfer (EFT) initiative further maximizes the benefits with payments directed to designated accounts, thus eliminating the impact of check clearance policies and traditional mail lead time or delays. The Commonwealth benefits because contractors reduce the cost of products and services through the applied discount. Payments that are processed electronically may be tracked and verified through the Comptroller's Vendor Web system. The PPD form may be found as an attachment for this Bid on [COMMBUYS](#).

Bidders must submit agreeable terms for Prompt Payment Discount using the PPD form within their proposal, unless otherwise specified by the SSST. The SSST will review, negotiate, or reject the offering as deemed in the best interest of the Commonwealth.

The requirement to use PPD offerings may be waived by the SSST on a case-by-case basis if participation in the program would be unduly burdensome on the bidder. If a bidder is claiming that this requirement is a hardship or unduly burdensome, the specific reason must be documented in or attached to the PPD form.

19. Public Records. All responses and information submitted in response to this RFQ are subject to the Massachusetts Public Records Law, M.G.L., c. 66, s. 10, and to c. 4, s. 7, ss. 26. Any statements in submitted responses that are inconsistent with these statutes, including marking by bidders of information as confidential during the quote submission process in COMMBUYS, shall be disregarded.

20. Reasonable Accommodation. Bidders with disabilities or hardships that seek reasonable accommodation, which may include the receipt of RFQ information in an alternative format, must communicate such requests in writing to the contact person. Requests for accommodation will be addressed on a case by case basis. A bidder requesting accommodation must submit a written statement which describes the bidder's disability and the requested accommodation to the contact person for the RFQ. The SSST reserves the right to reject unreasonable requests.

21. Restriction on the Use of the Commonwealth Seal. Bidders and contractors are not allowed to display the Commonwealth of Massachusetts Seal in their bid package or subsequent marketing materials if they are awarded a contract because use of the coat of arms and the Great Seal of the Commonwealth for advertising or commercial purposes is prohibited by law.

22. Subcontracting Policies. Prior approval of the department is required for any subcontracted service of the contract. Contractors are responsible for the satisfactory performance and adequate oversight of its subcontractors. Human and social service subcontractors are also required to meet the same state and federal financial and program reporting requirements and are held to the same reimbursable cost standards as contractors.

23. Acceptable Forms of Signature

Department will instruct contractor on what form of Signature will be required for this procurement. Effective June 15, 2021, for all 1) CTR forms, including the Standard Contract Form, W-9s, Electronic Funds Transfer (EFT) forms, ISAs, and other CTR-issued documents and forms, or 2) documents related to state finance and within the statutory area of authority or control of CTR (i.e. contracts, payrolls, and related supporting documentation), CTR will accept signatures executed by an authorized signatory in any of the following ways: 1. Traditional "wet signature" (ink on paper); 2. Electronic signature that is either: a. Hand drawn using a mouse or finger if working

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from a touch screen device; or Page 2 b. An uploaded picture of the signatory's hand drawn signature 3. Electronic signatures affixed using a digital tool such as Adobe Sign or DocuSign. If using an electronic signature, the signature must be visible, include the signatory's name and title, and must be accompanied by a signature date. Please be advised that typed text of a name not generated by a digital tool such as Adobe Sign or DocuSign, even in computer-generated cursive script, or an electronic symbol, are not acceptable forms of electronic signature.

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Appendix B: Instructions for Vendors Responding to Bids

Introduction

COMMBUYS refers to all solicitations, including but not limited to Requests for Proposals (RFP), Invitations for Bid (IFB), Requests for Response (RFQ), Requests for Quote (RFQ), as “Bids.” All responses to Bids are referred to as “Quotes.”

Steps for Bidders to Submit a Quote

1. Launch the COMMBUYS website by entering the URL (www.COMMBUYS.com) into the browser.
2. Enter Bidder login credentials and click the **Login** button on the COMMBUYS homepage. Bidders must be registered in COMMBUYS in order to submit a Quote. Each Vendor has a COMMBUYS Seller Administrator, who is responsible for maintaining authorized user access to COMMBUYS.
3. Upon successful login, the Vendor home page displays with the Navigation and Header Bar as well as the Control Center. The Control Center is where documents assigned to your role are easily accessed and viewed.
4. Click on the **Bids** tab
5. Clicking on the Bid tab opens four sections:
 - a. Request for Revision
 - b. Bids/Bid Amendments
 - c. Open Bids
 - d. Closed Bids
6. Click on the blue **Open Bid** hyperlinks to open and review an open bid
7. A new page opens with a message requesting you acknowledge receipt of the bid. Click **Yes** to acknowledge receipt of the bid. Bidders should acknowledge receipt to receive any amendments/updates concerning this bid.
8. After acknowledgement, the bid will open.

The top left half of the page contains the following information:

- a. Purchaser
- b. Department
- c. Contact for this bid
- d. Type of purchase
 - i. Open Market
 - ii. Blanket
- e. Pre-Bid Conference details (if applicable)
- f. Ship-to and Bill-to addresses
- g. Any attachments to the bid, which may include essential bid terms, response forms, etc.

The top right half of the bid includes the following information:

- h. Bid Date
- i. Required Date
- j. Bid Opening Date – date the bid closes and no further quotes will be accepted

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- k. Informal Bid Flag
 - l. Date goods/services are required
9. The lower half of the page provides information about the specific goods/services the bid is requesting.
10. Click **Create Quote** to begin.
11. The General tab for a new quote opens. This page is populated with some information from the bid. Fields available to update include:
- a. Delivery days
 - b. Shipping terms
 - c. Ship via terms
 - d. Is “no” bid – select if you will not be submitting a quote for this bid
 - e. Promised Date
 - f. Info Contact
 - g. Comments
 - h. Discount Percent
 - i. Freight Terms
 - j. Payment Terms

It is important to note that the bid documents (RFQ and attachments) may specify some or all of these terms and may prohibit you from altering these terms in your response. Read the bid documents carefully and fill in only those items that are applicable to the bid to which you are responding.

Update these fields as applicable to the bid and click **Save & Continue** to save any changes and create a Quote Number.

The page refreshes and messages display. Any message in Red is an error and must be resolved before the quote can be submitted. Any message in Yellow is only a warning and will allow processing to continue.

The following messages are received:

Terms & Conditions is not acknowledged – to resolve this, click on the Terms & Conditions tab and accept the terms. Your quote has not been submitted – information message; no action required

12. Click on the Terms & Conditions Tab. This tab refers to the terms and conditions that apply to this bid. The terms and conditions must be accepted before your quote can be submitted. If your acceptance is subject to any exceptions, those exceptions must be identified here. Exceptions cannot contradict the requirements of the RFQ, or required Commonwealth standard forms and attachments for the bid. For instance, an RFQ may specify that exceptions may or will result in disqualification of your bid.
13. Click the **Items** tab. The Items tab displays information about the items requested in the bid. To view additional details about an item, click the item number (blue hyperlink) to open.

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14. The item opens. Input all of your quote information and click **Save & Exit**.
 15. **CONFIDENTIAL INFORMATION:** If documents uploaded in your quote response contain confidential information (security sensitive, EFT, W9, Commonwealth Terms and Conditions), **you must mark each item as confidential**. The confidential column on the Attachments view allows the user to select whether the attached form is confidential or not. Place a check box under the confidential column for each confidential attached form.
 16. Click on the **Attachments** Tab. Follow the prompts to upload and name all required attachments and forms and bid response documents in accordance with the instructions contained in the solicitation or bid documents. After uploading each individual file or form, click **Save & Continue**. After you have uploaded all required documents click **Save & Exit**. Be sure to review your attachments to make sure each required document has been submitted.
 17. Click the Summary tab. Review the information and update/correct, as needed. If the information is correct, click the **Submit Quote** button at the bottom of the page.
 18. A popup window displays asking for verification that you wish to submit your quote. Click **OK** to submit the quote.
 19. The Summary tab redisplay with an updated Status for the quote of **Submitted**.
 20. Your quote submission is confirmed only when you receive a confirmation email from COMMBUYS. If you have submitted a quote and have not received an email confirmation, please contact the COMMBUYS Help Desk at COMMBUYS@state.ma.us.
- If you wish to revise or delete a quote after submission, you may do so in COMMBUYS: (1) for a formal bid, prior to the bid opening date, or (2) for an informal bid (which may be viewed upon receipt), prior to the opening of your quote by the issuing entity or the bid opening date, whichever is earlier.

Bidders may not submit Multiple Quotes in response to a Bid unless the Bid authorizes Multiple Quote submissions. If you submit multiple quotes in response to a bid that does not allow multiple quotes, only the latest submission prior to the bid opening date will be evaluated.

Glyphosate Scientific Review Phase 1 Report

Prepared for:

Massachusetts Department of Agricultural Resources
251 Causeway Street #500
Boston, MA 02114

Prepared by:



Eastern Research Group, Inc.
110 Hartwell Avenue
Lexington, MA 02421

June 6, 2022

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1.0 Introduction

In 2021, the Massachusetts legislature enacted the Acts of 2021. Chapter 24 of this legislation established budgets for many state government activities, including the formation of a commission charged with conducting “a scientific review of the potential impacts of glyphosate and its most common alternative herbicides on the environment and public health” (Commonwealth of Massachusetts, 2021).

The legislation further states that: “...the pesticide subcommittee established under section 3A of chapter 132B of the General Laws shall use said scientific review as part of an individual review conducted under 333 C.M.R. 8.03 to determine whether current uses of glyphosate pose unreasonable adverse effects to the environment, and whether current registered uses of glyphosate should be altered or suspended” (Commonwealth of Massachusetts, 2021).

Pursuant to the Acts, the Glyphosate Commission was formed, and the Commission opted to use contractor support to conduct the glyphosate scientific review. The Massachusetts Department of Agricultural Resources (MDAR), on behalf of the Glyphosate Commission, issued a Request for Quotes to seek contractor support for this project. After an open bidding process, MDAR issued a contract to Eastern Research Group, Inc. (ERG) to conduct the scientific review of glyphosate and its alternatives. The review is to consider uses, restrictions, public health impacts, and environmental impacts of glyphosate. The results of the review will be presented to the Glyphosate Commission and then submitted to the joint Committee of Environment, Natural Resources and Agriculture.

MDAR split the glyphosate scientific review project into two phases. In Phase One, MDAR tasked ERG with identifying all resources to consider for the scientific review, and ERG will then review those resources in Phase Two. ERG, with assistance from its subcontractor Tetra Tech, Inc., prepared this Phase One report, which is organized into the following sections. The list quotes text from the scope of work from this project’s original Request for Quotes.

- [Section 2.0](#) presents “a summary of available information on the use of glyphosate in the Commonwealth and key herbicide agent alternatives,” including available information on “use restrictions and requirements to minimize impacts.”
- [Section 3.0](#) lists “key assessments (e.g., recent assessments by recognized authorities including, for example, the U.S. Environmental Protection Agency; peer reviewed publications; precedential judicial decisions), of the potential public health and environmental impacts of glyphosate and its alternatives.” This section presents the requested information separately for glyphosate’s public health impacts (Section 3.1) and environmental impacts (Section 3.2) and impacts of glyphosate alternatives (Section 3.3).
- [Section 4.0](#) lists “key stakeholders to be consulted” by ERG and Tetra Tech as part of the broader glyphosate scientific review.
- [Section 5.0](#) lists the references cited throughout this report.
- [Section 6.0](#) provides a list of abbreviations.

ERG anticipates that the Glyphosate Commission (and potentially other stakeholders) will review and comment on this Phase One report. Those comments might include recommendations for additional resources to include in this report. After receiving all feedback on the current version, ERG will prepare and submit a final Phase One report.

Once MDAR authorizes ERG to proceed with Phase Two, ERG and Tetra Tech will begin compiling, researching, and synthesizing information from the resources identified in this Phase One report. That work will culminate with ERG submitting the Phase Two report, which will include a scientific review of human health and ecological impacts of glyphosate and selected alternatives.

2.0 Summary of Available Information on Uses of Glyphosate and Alternatives

This section presents background information on glyphosate ([Section 2.1](#)); summarizes categories of glyphosate uses in the Commonwealth and, where data are available, the quantities of glyphosate used ([Section 2.2](#)); and identifies glyphosate alternatives that have been reported in the literature and the subset of herbicide alternatives that will be evaluated in Phase Two ([Section 2.3](#)).

During Phase Two of this project, the ERG Team will contact key stakeholders on glyphosate use in Massachusetts (see [Section 4.0](#)). Through those stakeholder contacts, ERG will seek additional Massachusetts-specific input on glyphosate uses, glyphosate usage quantities, and glyphosate alternatives.

2.1 Background Information on Glyphosate

Glyphosate is a synthetic, non-selective systemic herbicide that controls a wide variety of plants including grasses, annuals, perennials, and woody plants. Since it is non-selective and acts systemically, it has been frequently used in commercial farming, transportation right of ways (such as highway borders and railways), residential applications, and for habitat management. Both nationally and in Massachusetts, glyphosate usage has increased dramatically over the past 30 years (Benbrook, 2016 and references therein). The increase is due at least in part to the availability of commonly produced crops (e.g., corn, soybeans) genetically modified to be resistant to glyphosate. As a result, at farms that grow glyphosate-resistant crops, a wide variety of weeds can be controlled using glyphosate without harming crop production.

Glyphosate is the active ingredient in many herbicide formulations that have been registered by the U.S. Environmental Protection Agency (EPA) and approved by Massachusetts authorities for use in the Commonwealth. ERG searched the Massachusetts Pesticide Product Registration Information website (Kelly Solutions, 2022) for details on the herbicides that contain glyphosate or glyphosate salts (e.g., ammonium glyphosate, potassium glyphosate, the isopropylamine salt of glyphosate). As of May 1, 2022, the database includes records for ten active ingredients for glyphosate or glyphosate compounds, and these records pertain to 156 unique EPA registration numbers. The glyphosate concentrations across these 156 herbicides range from 0.14 percent to 95.2 percent, with a median active ingredient concentration of 41 percent. Like other herbicide active ingredients, manufacturers formulate a mixture of glyphosate and other ingredients, such as carriers, solvents, and surfactants, to maintain efficient application and maximum effectiveness. While manufacturers must disclose the identities and concentrations of active ingredients on product labels, no such requirement applies for other ingredients.

The Kelly Solutions database also includes information on weeds controlled by the various products, sites where the herbicides may be used, and links to the EPA stamped labels for the products. The specific weeds controlled by the registered glyphosate-containing herbicides vary. Many glyphosate-containing herbicides registered in Massachusetts include more than 100 weeds that the products control—and some registered herbicides list more than 300 weeds that are controlled. The sites to which the products can be applied also vary. Some registrations list only one site where products may be applied (e.g., some products are only used in corn fields) but others list more than 500 sites.

The EPA-accepted product labels include extensive information about the herbicides, and most labels reviewed were at least 50 pages long. These labels have information on application methods and rates, formulation details, precautionary statements, steps to prevent resistance, and other topics. Glyphosate products are applied to target areas using a variety of mechanical devices, including hand-held or backpack sprayers and other methods. The most appropriate application method depends on the size of the target area, the density of plant pests, concerns about impacts to surrounding areas, and other factors. The EPA-accepted labels provide further details on application methods for individual products. In most cases, labels warn users not to apply glyphosate-containing herbicides directly to water and outline steps users should take to prevent contamination of water resources; however, some glyphosate-containing herbicides can be used to control emergent aquatic weeds in certain circumstances.

2.2 Glyphosate Uses in Massachusetts

As noted previously, the Massachusetts Pesticide Product Registration Information website lists the approved uses of every glyphosate-containing herbicide registered in the Commonwealth, and these lists include hundreds of entries. Based on this information, most glyphosate uses in Massachusetts fall under the following categories:

- Weed control for row crops (e.g., corn, soybeans, alfalfa)
- Weed control in orchards (e.g., apples)
- Weed control at nurseries

- Control of problematic plants (e.g., dodder, dewberries) in cranberry farming (UMass, 2008)
- Control of nuisance plants in and along transportation rights of way (e.g., highways, railways)
- Residential and commercial landscape management to control weeds and unwanted plants
- Aquatic weed control as a restricted use herbicide in MassDEP-permitted applications
- Habitat management for wildlife and unique ecosystems to control invasive plant species

The ERG Team also sought data on the amounts of glyphosate-containing herbicides used in Massachusetts for different purposes, but quantitative usage information was only available for row crop applications. Specifically, the most recent agricultural herbicide usage data reported by the United States Geological Survey (Wieben, 2021) indicates the following glyphosate usage quantities in 2019 for row crops in Massachusetts:

- 5,381 kg for corn
- 520 kg for fruits and vegetables
- 78 kg for soybeans
- 77 kg for orchards
- 51 kg for alfalfa

The ERG Team searched for estimates of glyphosate usage quantities for the various non-agricultural uses noted above, but no reports were identified that include this information. ERG is aware that licensed applicators must submit annual reports on pesticide applications to MDAR, and glyphosate usage quantities for certain applications can be derived from information in these reports. However, the applicators' annual reports are only available in paper form and must be reviewed individually to estimate statewide usages. In Phase Two, ERG will assess whether the reports can be reviewed with available project resources. Note that the licensed applicators' annual reports do not account for glyphosate applied by non-licensed users (e.g., homeowners who use Roundup).

2.3 Glyphosate Alternatives

This contract's scope of work calls for the ERG Team to not only summarize available information on glyphosate uses in the Commonwealth, but also to summarize use of "key herbicide agent alternatives." ERG interprets this requirement as referring to chemical alternatives to glyphosate, but for completeness, ERG initially searched for a broader range of glyphosate alternatives.

ERG first identified resources that identify glyphosate alternatives. These include, but are not limited to: a University of Massachusetts (UMass) Extension Turf Program website on glyphosate alternatives (UMass CAFE, 2020); an herbicide alternatives research study that UMass researchers conducted for the Massachusetts Executive Office of Transportation (Barker and Prostack, 2008; 2009); the latest Massachusetts Department of Transportation (MassDOT) Vegetation Management Plan (MassDOT, 2021); a North Carolina State University Extension website on glyphosate alternatives for landscapers (Neal and Senesac, 2022); a technical committee report on glyphosate alternatives for vegetation management in the Los Angeles area (Chiotti et al., 2010); and multiple weed control manuals issued by various state agencies nationwide.

These resources group glyphosate alternatives into multiple categories. For purposes of this project, ERG will consider four categories of alternatives. The list below demonstrates the range of alternatives that are currently available, without consideration for what alternatives are most viable for specific uses in the Commonwealth. Whether a given alternative is feasible will depend on the use, and preferred alternatives might vary between farmers, organic farmers, orchard owners, roadside applicators, nursery owners, habitat managers, landscapers, and homeowners. The feasibility of alternatives and preferred application methods will depend on other factors, like target species, desired effectiveness, potential environmental impacts, area of application, site access, applicable regulations and restrictions, and cost.

Phase Two will consider the following four categories of alternatives. ERG will seek stakeholder input (see [Section 4.0](#)) on preferred alternatives in Massachusetts.

- Chemical methods are use of chemical herbicides. A wide range of chemical formulations available is available, as discussed below.
- Mechanical methods include use of mechanical devices to control weeds. Examples include tilling soils, mowing weeds, burning weeds, or killing them with steam (with or without foam).
- Physical methods are options for controlling weeds manually, whether by removing weeds from the soil (e.g., hand-picking weeds, hoeing weeds) or by applying materials to suppress weed growth (e.g., mulch, weed mats).
- Biological methods include use of other organisms to remove weeds or inhibit their growth. These include use of herbivores (e.g., sheep, goats, cattle) to consume weeds and use of other plants (e.g., clover) to compete with weeds.

The ERG Team will consider multiple chemical methods in Phase Two. The chemical herbicide alternatives exhibit a range of properties relevant to weed control (e.g., systemic vs. contact herbicides; selective vs. non-selective herbicides; pre-emergent vs. post-emergent herbicides) and may require multiple applications to achieve the desired effectiveness. The Phase Two evaluation will consider two groups of chemical methods as alternatives:

- EPA-registered herbicides. The resources that the ERG Team reviewed (Barker and Prostack, 2008; 2009; Chiotti et al., 2010; MassDOT, 2021; Neal and Senesac, 2022; UMass CAFE, 2020) list EPA-registered herbicide products that researchers have proposed or investigated as glyphosate alternatives for certain uses. Table 1 lists the alternative active ingredients for selected products. These alternatives contain various active ingredients, including both synthetic chemicals and substances derived from natural sources. Note: Just because Table 1 lists potential alternatives does not mean they have been demonstrated to serve as effective glyphosate substitutes in Massachusetts or elsewhere.

Table 1. Potential Chemical Herbicide Alternatives to Be Considered in Phase Two

Active Ingredient ^a	Number of Unique Pesticide Registrations Containing Active Ingredient in Massachusetts	Concentration Range of Active Ingredient in Products Registered in Massachusetts
2,4-D	47	0.146% – 38.87%
Aminopyralid compounds ^b	6	2.22% – 71.01%
Caprylic acid	14	0.099% – 47%
Chlorsulfuron	6	15% – 75%
Clethodim	19	12.6% – 26.4%
Clopyralid compounds ^b	21	0.071% – 60%
Diquat compounds ^b	44	0.04% – 37.3%
Dithiopyr	82	0.08% – 40%
Fluazifop-P-butyl	22	0.06% – 24.5%
Glufosinate compounds ^b	29	0.36% – 45.9%
Imazapyr compounds ^b	44	0.16% – 63.2%
Imazethapyr compounds ^b	12	1.38% – 50.2%
Indaziflam	13	0.0061% – 24.3%
Isoxaben	14	0.0008% – 93.5%
d-Limonene	9	1% – 70%
Metsulfuron compounds ^b	20	0.75% – 60%
Oryzalin	9	1% – 41%
Pelargonic acid	23	2% – 57%
Pendimethalin	37	0.81% – 39%
Prodiamine	69	0.2% – 65%
Sethoxydim	7	13% – 18%
Simazine	9	41.9% – 90%

Active Ingredient ^a	Number of Unique Pesticide Registrations Containing Active Ingredient in Massachusetts	Concentration Range of Active Ingredient in Products Registered in Massachusetts
Sulfometuron methyl	8	6.5% – 75%
Triclopyr compounds ^b	84	0.084% – 83.9%

Notes:

Data compiled from queries of the Massachusetts Pesticide Product Registration Information website (Kelly Solutions, 2022).

^a Certain formulations have multiple active ingredients, which may include glyphosate.

^b Where active ingredients are in multiple chemical forms, Table 1 collapses the various active ingredients into one entry labeled with “compounds.” For example, Table 1 lists the multiple salts of aminopyralid as “aminopyralid compounds.”

In Phase Two of the project, the ERG Team will narrow the list of alternative chemical options based on input from the Glyphosate Commission and from stakeholders (see [Section 4.0](#)). The ERG Team will ask stakeholders about current and prospective uses of chemical herbicide alternatives, including input on any viable alternatives not listed in Table 1 or elsewhere in this report; whether alternatives are better suited for specific uses (e.g., commercial agriculture, organic farming, roadside weed control, nurseries, residential landscaping); and information on alternatives’ effectiveness.

- **Minimum risk pesticides.** The other chemical alternatives to glyphosate-containing products are those that meet the criteria for “minimum risk pesticides” and therefore EPA does not register them under the Federal Insecticide, Fungicide, and Rodenticide Act. To be eligible for this designation, the products must contain active ingredients and inert ingredients from lists of substances developed by EPA (EPA, 2015a; 2016) and meet additional criteria for labeling, health claims, and other factors. Examples of active ingredients for “minimum risk pesticides” include citric acid, clove oil, coconut oil, corn gluten meal, garlic oil, and lauryl sulfate (EPA, 2015a). Formulations containing acetic acid at concentrations up to 8 percent are also eligible to be “minimum risk pesticides,” provide the other applicability criteria are met.

3.0 Key Assessments to Review

This section presents a list of “key assessments” that the ERG team proposes reviewing. Consistent with the contract scope of work, we consider “key assessments” to include (1) recent assessments published by selected government agencies and international bodies, (2) peer-reviewed publications in scientific journals, and (3) precedential judicial decisions. The ERG team compiled the list of assessments and relevant publications from a diverse set of resources, including state and federal government agencies, agencies from selected foreign countries, international bodies, non-governmental organizations, databases of judicial decisions, and the peer-reviewed literature.

This section identifies “key assessments” that the ERG team will review on glyphosate’s human health impacts (see [Section 3.1](#)) and glyphosate’s ecological impacts (see [Section 3.2](#)) and assessments on the most common alternative herbicides (see [Section 3.3](#)). After receiving approval to proceed to Phase Two, the ERG team will review the assessments listed throughout this section and relevant supporting documents, which may include interim assessments, final determinations, and responses to comments. In Phase Two, the ERG Team will acknowledge which findings pertain to technical grade glyphosate separately from findings that pertain to commercial formulations that contain glyphosate and other substances (adjuvants), to the extent this information is available.

It is important to note that the state of the science of glyphosate’s human health and environmental impacts continues to evolve. The following sub-sections include provisions to account for recently completed studies and for key assessments expected to be issued later this year.

3.1 Assessments of Glyphosate's Human Health Impacts

This section identifies the “key assessments” that the ERG team will consider on glyphosate's human health impacts.

3.1.1 Recent and Ongoing Assessments Published by Recognized Authorities

The ERG team proposes reviewing and summarizing the following publications in Phase Two, considering a range of cancer and non-cancer human health impacts. Importantly, the Phase Two review will consider the fact that the various assessments have different scopes, reviewed different sets of literature (i.e., the assessments were completed in different years), and followed different methodologies. These differences will factor into the ERG Team's synthesis of information on human health impacts.

The list is organized into three categories of authors. For purposes of this project, an assessment was considered either a publication that comprehensively reviews the literature on glyphosate toxicity and reaches conclusions on carcinogenicity, non-cancer toxicity, or both or an ongoing significant research study of glyphosate toxicity in humans.

Assessments Issued by Federal and State Authorities in the United States

- EPA first registered glyphosate as a pesticide in 1974 and has periodically reassessed health risks since. The ERG team will review multiple documents posted to the EPA [Glyphosate Registration Review](#) docket. These documents include the most recent Interim Registration Review Decision to continue to list glyphosate (EPA, 2020a) and the accompanying Draft Human Health Risk Assessment (EPA, 2018a); EPA's responses to comments (EPA, 2019; 2020b; 2020c); and other relevant supporting documents (EPA 2018b; 2018c). Note that the ERG Team will not review every entry in the EPA docket, because the docket contains more than 14,000 entries.
- Congress mandated the Agency for Toxic Substances and Disease Registry (ATSDR) to develop toxicological profiles for hazardous substances found at Superfund sites. ATSDR has prepared more than 180 toxicological profiles, including its [Toxicological Profile for Glyphosate](#) (ATSDR, 2020). The profile considered peer-reviewed literature published through September 2017.
- The National Toxicology Program (NTP) falls within the U.S. Department of Health and Human Services. NTP has previously issued cancer classifications for selected hazardous substances and the program's Report on Carcinogens is a widely cited resource for evidence of carcinogenicity. Although NTP has not yet classified glyphosate for carcinogenicity, the program is currently researching the toxicity of [glyphosate and selected glyphosate formulations](#). NTP has released limited results from *in vitro* and genetic toxicity tests and may issue additional publications in 2022 (NTP, 2022).
- The U.S. Forest Service (USFS) within the U.S. Department of Agriculture (USDA) has a mission to “sustain the health, diversity, and productivity of the Nation's forests and grasslands.” In support of that mission, USFS has evaluated the toxicity of various herbicides, including a 2011 contractor report that presented a [human health and ecological risk assessment](#) of glyphosate (USFS, 2011). A 2003 contractor report addressed the same topic (USFS, 2003).
- The [Agricultural Health Study](#) is an ongoing prospective epidemiological study that is examining adverse health effects among pesticide applicators and their spouses. The National Cancer Institute and the National Institute of Environmental Health Studies fund this study, which has included collaboration from EPA and the National Institute for Occupational Safety and Health. Westat, a government contractor, has been coordinating the study. Although the study is not specific to glyphosate, the investigators have published journal articles on relationships between cancer incidence and glyphosate use (Androtti et al., 2018; De Roos et al., 2005).
- California's Office of Environmental Health Hazard Assessment (OEHHA) sets “No Significant Risk Levels” (NSRLs) for toxic substances regulated under the state's Safe Drinking Water and Toxic Enforcement Act of 1986 (i.e., Proposition 65). In July 2017, OEHHA issued an [Initial Statement of Reasons](#) for glyphosate that proposed an NSRL for glyphosate based on cancer outcomes observed in laboratory animals. The state has also proposed changes to the wording of warnings on glyphosate-containing products used in

California. A final rulemaking on the updated warnings has not been issued, and the public comment period for that initiative ended earlier this month (CalEPA, 2022).

Assessments Issued by International Bodies (e.g., European Union and World Health Organization)

- The International Agency for Research on Cancer (IARC) is the agency within the World Health Organization that, among other functions, issues monographs to classify toxic substances by human carcinogenic potential. In 2017, IARC issued a [monograph](#) evaluating carcinogenicity for five pesticides and herbicides, including glyphosate. The monograph concludes that glyphosate is “probably carcinogenic to humans” (IARC, 2017).
- Other European Union agencies have completed assessments of glyphosate toxicity. In 2015, for example, the European Food Safety Authority (EFSA) completed an [assessment](#) that, among other findings, concluded that glyphosate is “unlikely to pose a carcinogenic hazard to humans” (EFSA, 2015). The European Union has approved the use of glyphosate, but that approval expires in December 2022. Another glyphosate assessment is currently being conducted by the Assessment Group on Glyphosate (AGG). In 2021, the AGG submitted both a draft Renewal Assessment Report (more than 10,000 pages) and an update to EFSA (AGG, 2021). The final Renewal Assessment Report, which will include final conclusions on human health impacts, is expected to be released in late 2022 or 2023.
- In May 2016, the Food and Agriculture Organization of the United Nations and the Core Assessment Group on Pesticide Residues of the World Health Organization (WHO) convened a panel to evaluate human health risks of consuming food products that contain pesticide residues; and a [summary report](#) was issued later in the year. This evaluation considered health risks for three pesticides, including glyphosate. The panel found that long-term exposures to glyphosate residues in food are “unlikely to present a human health concern” and that short-term exposures are “unlikely to present a risk to consumers” (FAO/WHO, 2016).

Assessments Issued by Selected Foreign Governments (Outside the European Union)

- In Canada, the Pest Management Regulatory Agency (PMRA) of Health Canada authorizes uses of pesticides. In 2017, PMRA re-authorized use of glyphosate and published an [assessment](#) that considered cancer risk and potential health impacts associated with dietary exposures, occupational exposures, and household uses. An advocacy group sued the agency regarding the re-authorization decision; and in February 2022, a Federal Court of Appeal in Canada issued a ruling that directed the PMRA to reconsider certain procedural aspects of the re-authorization. The court decision did not change the glyphosate authorization, however. In Phase Two, ERG will investigate whether PMRA has issued new assessment documents on glyphosate human health impacts, given the implications of the recent court decision.
- In 2016, the Food Safety Commission of Japan completed a human health risk assessment of different commercial grades of glyphosate. The complete assessment report is only available in Japanese, but ERG will review the [summary of conclusions](#), which is written in English (FSCJ, 2016). The human health risk assessment considered a range of cancer and non-cancer outcomes and derived an acceptable daily intake for glyphosate.
- The Australian Pesticide and Veterinary Medicines Authority (APVMA) has multiple mandates, including regulation of the use of pesticides in Australia. In 2016, APVMA issued a [regulatory position paper](#) that found no “scientific grounds for placing glyphosate and products containing glyphosate under formal reconsideration,” based both on human health and ecological considerations (APVMA, 2016).

3.1.2 Peer-reviewed Publications

The major assessments reviewed in the previous section were completed in different years, and they considered peer-reviewed literature issued up through different cutoff dates (e.g., the ATSDR 2020 Toxicological Profile is based on a literature search completed in September 2017). These assessments therefore do not consider findings from research published after the corresponding literature search cutoff dates. This is an important disconnect because scientists worldwide continue to study human health impacts associated with glyphosate exposure, and highly relevant publications have become available in recent years on glyphosate genotoxicity (e.g., Benbrook et

al., 2019), cancer (e.g., Leon et al., 2019; Zhang et al., 2019; Boffetta et al., 2021), reproductive effects (e.g., Mohammadi et al., 2021), and various other health outcomes.

To ensure this project's scientific review is complete and current, the ERG Team will perform a literature search to identify recent peer-reviewed publications on glyphosate's human health impacts. ERG will prepare a literature search methodology memorandum for review by the Glyphosate Commission before executing the search. We anticipate conducting this task using the PubMed search engine and focusing on the most recent 5 years of publications (2018-2022). Key words for the search will include terms related to the herbicide (e.g., glyphosate, Roundup), the various health outcomes under consideration (e.g., cancer, genotoxicity, reproductive toxicity, developmental toxicity, endocrine disruption), and others (e.g., epidemiology). ERG will select the key words in an iterative fashion, using approaches ERG has previously applied in literature review projects and considering key words that EPA used in a recent glyphosate literature search (EPA, 2018d).

Upon executing the search, ERG will compile potentially relevant publications in a reference management system (either EndNote or RefWorks), remove duplicate entries, and remove entries for publications not written in English. The next step will be reviewing the references' titles and abstracts for relevance, after which ERG will have a final list of the recent literature of relevance to glyphosate human health impacts. ERG will then obtain the publications that passed the initial title and abstract screening and again review publications for relevance. ERG then intends to review every publication that passed the different tiers of screening. However, should this search identify an unexpectedly substantial number of potentially relevant publications, ERG will discuss with the Glyphosate Commission options for synthesizing the literature within the bounds of the project budget (e.g., focusing on review articles and meta-analyses, focusing on health endpoints of greatest interest).

3.1.3 Precedential Judicial Decisions

To identify precedential judicial decisions, an attorney with ERG executed a search of a case law database using the Casetext Research software platform. The Casetext database includes cases for which a judicial order has been issued. This includes federal and state case law, with all 50 states considered. A judicial order could mean that a court or judicial officer issued a decision or that an order was issued after two parties reached agreement. Not all filed claims result in judicial orders. Selected details of the initial Casetext searches follow:

- Searching on "glyphosate" without a date range yielded 255 cases filed in state and federal courts, but no case law from Massachusetts state court. Of the cases identified, 108 were filed in the last 5 years. EPA was a party in five of the cases.
- Over the last 5 years, 49 glyphosate tort law cases were identified, most of which focused on cancer outcomes (particularly lymphoma); and 39 glyphosate regulatory law cases were identified. The two most litigated issues in the tort law cases include the causes of action on product liability and negligence. Upon initial review, the product liability cases are rooted in what information should be included in product labels and whether plaintiffs were properly warned about carcinogens, ecological concerns, and other issues. The negligence claims are centered around plaintiffs' ability to show that the products containing glyphosate are the actual cause of their health effects.
- 19 cases were identified that addressed ecological issues but did not address lymphoma. These cases related to product liability, the Endangered Species Act, and the Plant Protection Act.
- Ongoing legal proceeding pertain to EPA's January 2020 interim registration review decision to continue to register various forms of glyphosate as a pesticide. Multiple parties, including the Natural Resources Defense Council, the Rural Coalition, the National Family Farm Coalition, the Center for Biological Diversity, and the Pesticide Action Network, sued EPA over its interim decision. In May 2021, EPA submitted a filing to the U.S. Court of Appeals that sought permission to revise previously issued glyphosate assessment documents—but did not propose changing the glyphosate registration status.

In Phase Two, ERG will synthesize information in the 49 tort law cases referenced above and the status of the legal challenges to EPA's interim registration review decision. Further, recognizing that precedential cases on glyphosate are a changing landscape, ERG intends to conduct a more thorough legal review of all cases for relevance during

Phase Two. ERG seeks input from Glyphosate Commission members on whether any subset of court decisions are of greatest interest for the Phase Two review.

3.2 Assessments of Glyphosate’s Environmental Impacts

This section identifies the “key assessments” that the ERG team will consider on environmental impacts of glyphosate and glyphosate formulations. The content is organized into the three types of “key assessments” included in this contract’s scope of work. Assessments that reported on both human health and environmental impacts are listed both below and in [Section 3.1](#).

The ERG Team will consider a range of environmental impacts when reviewing publications listed in this section. These impacts include direct toxicity effects on non-target aquatic and terrestrial species due to contact with glyphosate, especially for species that may be rare or endangered in Massachusetts; sublethal effects on aquatic and terrestrial biota such as behavioral effects that may have ecological significance on particular species populations; indirect effects on pollinators (e.g., honeybees, monarch butterflies) due to potential habitat impacts; and indirect effects on other aquatic and terrestrial biota due to potential impacts on their habitats. The ERG Team will consider the various glyphosate-related environmental impacts that have been studied as well as the uncertainties associated with the assessments and their underlying publications.

As with the key assessments of human health impacts, the key assessments presented below were prepared to address different issues, employed different methodologies, and drew from different subsets of the peer-reviewed literature. The ERG Team will account for and explain these differences when preparing the Phase Two report.

3.2.1 Recent and Ongoing Assessments Published by Recognized Authorities

The ERG team proposes reviewing and summarizing the following assessments conducted by recognized authorities in Phase Two of the contract. The list is organized into three categories of authors.

Assessments Issued by Federal and State Authorities in the United States

- As noted previously, EPA originally registered glyphosate as a pesticide and has since reassessed the use as part of the statutorily mandated 15-year review cycle. The ERG team will review multiple documents that EPA and its contractors prepared (or reviewed) on glyphosate environmental risks, and most documents of interest are posted to the EPA [Glyphosate Registration Review](#) docket. These documents include but are not limited to: the “Final National Level Listed Species Biological Evaluation for Glyphosate” (EPA, 2021); the “Interim Registration Review Decision: Case Number 0178” (EPA, 2020a), which incorporates a relatively recent methodology for evaluating risks to honeybees, monarch butterflies, and other pollinators; and the 2015 “Preliminary Ecological Risk Assessment in Support of the Registration Review of Glyphosate and Its Salts” (EPA, 2015b). The ERG team will also review selected additional material posted to EPA’s docket, but as noted previously, a review of every docket entry is beyond the scope of this project.
- The ERG Team will review multiple publications issued by the USFS, including the 2003 and 2011 human health and ecological risk assessment cited in [Section 3.1](#) (USGS, 2003; 2011), articles in the peer-reviewed literature authored or co-authored by USFS and USDA scientists (e.g., Busse et al., 2001; Linz et al., 1999), and selected earlier profiles of glyphosate environmental impacts (e.g., USFS, 1997).
- The ERG Team will consult with MDAR for publicly available assessments that Massachusetts agencies have issued on glyphosate’s environmental impacts, beyond the updated summary fact sheet that MDAR has already issued (MDAR, 2022).

Assessments Issued by International Bodies and Agencies of Selected Foreign Countries

- In the European Union, glyphosate is currently being reevaluated for ecological effects and risk and this reevaluation is expected to be completed in late 2022 or 2023. EFSA and the European Chemical Agency are jointly reassessing glyphosate exposure and effects. Thus far, a working group has prepared a draft Renewal Assessment Report (dRAR), and that draft is currently being reviewed and will eventually be made public along with any modifications to the assessment. The ERG Team will review all available

information on the ongoing EFSA work, including: the Authority's summary of the dRAR (AGG, 2021); the Authority's evaluation of glyphosate residues in animal feed and potential impacts to animal health (EFSA, 2018); and the Authority's evaluation of glyphosate's endocrine disruption potential (EFSA, 2017).

- Recognizing that EFSA (and its AGG) has published more extensively on glyphosate's environmental impacts than other foreign government agencies, the ERG Team's review of assessments issued by international bodies will be limited to the EFSA publications. As the only exception, the ERG Team will also consider findings the Australian regulatory position paper on glyphosate, as that specifically addressed ecological impacts (APVMA, 2016).

Assessments Issued by Selected Non-Governmental Organizations (NGOs)

- In 2020, the Forest Stewardship Council (FSC), an NGO that advocates for forest management, issued environmental and social risk assessment guidance. The guidance includes appendixes that present information on six specific pesticides. The ERG Team will consider the contents of Appendix 1, which addresses glyphosate (FSC, 2020).
- In 2017, two organizations in Europe—Générations Futures and the Pesticide Action Network—issued a joint publication that, among other things, critiqued the literature search conducted by authors of a previous EFSA Renewal Assessment Report (GF and PAN, 2017). The report argued that the literature search should have been more inclusive of publications that reported various glyphosate-related impacts.
- In 2019, the Natural Resources Defense Council (NRDC) published a report raising concern about 10 species in the United States that are imperiled by pesticide use, and some of the concern centered on reported glyphosate impacts (NRDC, 2019).
- Massachusetts-based NGOs have developed websites that raise additional environmental impact concerns about glyphosate, such as the potential to contribute to development of glyphosate-resistant strains of weeds ("super weeds") that may then be difficult to control (NOFA/Mass, 2018). This NGO publication will be reviewed in Phase Two, along with others that are identified during the Glyphosate Commission's review of this Phase One report.

3.2.2 Peer-reviewed Publications

In recent decades, hundreds of peer-reviewed journal articles have reported on glyphosate contamination in the environment, exposures to this contamination, and specific biological effects. Conducting a systematic review of the entire history of glyphosate-related journal articles is outside the scope of this work. However, as part of its ongoing support for EPA's glyphosate review, ERG's subcontractor (Tetra Tech) has conducted extensive literature reviews of the evidence of glyphosate's environmental impacts.

Through that effort, ERG's subcontractor is familiar with the literature that addresses glyphosate's environmental impacts broadly (e.g., Ghandi et al., 2021; Gill et al., 2018; Maggi et al., 2020; Meftaul et al., 2020) as well as literature on glyphosate's impacts to specific receptors and species, including water fleas (Marek et al., 2013), rice fish (Smith et al., 2019), earthworms (Stellin et al., 2018), and phytoplankton (Wang et al., 2016). The citations presented in the previous sentence are only intended to show examples of relevant peer-reviewed literature and not to suggest that this is the universe of relevant publications. The Phase Two work will be based on our understanding of the overall body of literature, which was considered in the development of EPA's recent "Final National Level Listed Species Biological Evaluation for Glyphosate" (EPA, 2021). This review will consider the various types of environmental impacts listed at the beginning of this section, as well as strengths, limitations, and uncertainties associated with characterizing the impacts.

To ensure the Phase Two research is complete and current, Tetra Tech will assess the need for conducting a supplemental literature search. Whether this is necessary will depend on multiple factors, most notably on whether EFSA issues its final Renewal Assessment Report during Phase Two—and what date range of scientific publications were considered. The ERG Team will inform the Glyphosate Commission if a supplemental literature search will be conducted in Phase Two on glyphosate environmental impacts. If one is to be performed, the ERG Team will share with the Glyphosate Commission the search parameters (e.g., the search engine, the time frame of publications, and the search keywords).

3.2.3 Precedential Judicial Decisions

Certain aspects of the EPA pesticide registration process have faced legal challenges, with resolution to the most relevant challenge still pending. As noted previously, in 2020, NRDC and other parties filed suit against EPA to challenge multiple aspects of the proposed glyphosate registration, with part of the case centering on ensuring adequate protection of threatened and endangered species. While this litigation is still pending, the ERG Team is aware of recent efforts EPA has taken to ensure that its “pesticide program will meet its endangered species obligations” as documented in a publication that EPA issued just last month (EPA, 2022).

Additional precedential judicial decisions relevant to environmental impacts might be identified as ERG completes its review of case law at the beginning of Phase Two.

3.3 Assessments of Glyphosate Alternatives

For selected glyphosate alternatives, the Phase Two report will provide information on uses, effectiveness, and impacts on human health and the environment. The report will address the four categories of options listed in [Section 2.3](#), and provide more detailed information on selected EPA-registered chemical herbicide alternatives. The Phase Two report will consider assessments published for “minimum risk pesticides” that may serve as glyphosate alternatives; however, these alternatives might have limited published information on health and environmental impacts due to their “minimum risk” designation from EPA.

For the chemical herbicide alternatives reviewed in Phase Two, the ERG Team will consider the following two information sources for human health and environmental assessments:

- The ERG Team will conduct substance-specific searches on EPA’s Pesticide Chemical Search website (<https://ordspub.epa.gov/ords/pesticides/f?p=chemicalsearch:1>). For most substances listed in Table 1 of this report, this website provides links to documents with some combination of the following information: regulatory status, Reregistration Eligibility Decision (RED) documents, draft and final human health and ecological risk assessments, Endangered Species Act litigation, environmental fate and transport information, and regulatory dockets (which can include links to additional references).
- The ERG Team will also conduct substance-specific searches for human health and ecological risk assessments conducted by the USFS. These will be identified via searching the USFS Pesticide-Use Risk Assessments and Worksheets website (<https://www.fs.fed.us/foresthealth/protecting-forest/integrated-pest-management/pesticide-management/pesticide-risk-assessments.shtml>).

Project resources do not allow for more comprehensive searches of assessments for every alternative.

4.0 Key Stakeholders to Consult

This project’s scope of work calls for ERG to “consult with stakeholder groups on data and information collection.” In Phase One, ERG was only required to identify the stakeholder groups who will be contacted, but those groups will not be contacted until Phase Two. The ERG Team intends to contact stakeholders in Phase Two for the following reasons:

- To identify any relevant scientific assessments on glyphosate’s human health and environmental impacts, beyond those identified in Sections 3.1 and 3.2.
- To ask questions about relevant research in progress and pending assessments.
- To seek information on glyphosate uses in Massachusetts, the amounts of different glyphosate-containing formulations used, and experiences with using glyphosate alternatives.
- To understand glyphosate-related issues of greatest interest.

Based on these information needs, the ERG Team identified four categories of stakeholder groups to contact. Those categories are listed below, along with the stakeholders within each category whom ERG proposes contacting. ERG presented an initial list of proposed stakeholder contacts (and the rationale for selecting them) during the Glyphosate Commission meeting held on May 23, 2022. During ERG’s presentation, Commission

members and meeting participants recommended additional stakeholders to consider contacting. The ERG Team included those recommendations in the following list.

The ERG Team will contact the following stakeholders in Phase Two, to the extent that project resources will allow. The list includes initial points of contact for each stakeholder. The list is organized into four categories; within each category, the stakeholders are listed in alphabetical order, by the last names of the points of contact. The individuals listed below may refer ERG to other members or designees of their respective organizations. Individual stakeholder discussions will be limited to not longer than 1 hour.

Scientific Leads of Selected Glyphosate Assessments

- Dr. Aaron Blair, NCI, Chair for the 2017 IARC monograph
- Dr. Laura Beane Freeman, NCI, Principal Investigator for the Agricultural Health Study
- Dr. James Hetrick, EPA, Senior Advisor for the 2015 preliminary ecological risk assessment
- Dr. Hana Pohl, ATSDR, Lead for the 2020 Toxicological Profile for Glyphosate

Massachusetts Pesticide Board Subcommittee Members

- Michael Moore, chairperson, Massachusetts Department of Public Health
- Richard Berman, public member of the Pesticide Board Subcommittee
- Margret Cooke, Acting Commissioner, Massachusetts Department of Public Health
- John Lebeaux, Commissioner, MDAR
- Jim Montgomery, Commissioner, Massachusetts Department of Conservation and Recreation

Selected Non-Government Organizations (Alphabetical Order by Last Name of Contact)

- Diane Butt, Board of Directors, Massachusetts Christmas Tree Association
- Liam Condon, President, Bayer Crop Science Division
- Janet Domenitz, Executive Director, MASSPIRG
- Jocelyn Forbush, Acting President and Chief Executive Office, The Trustees of Reservations
- Robb Johnson, Executive Director, Massachusetts Land Trust Coalition
- Karen Kerr, President, Massachusetts Association of Landscape Professionals
- Jocelyn Langer, Executive Director, Northeast Organic Farming Association, Massachusetts Chapter
- Rie Macchiarolo, President, Ecological Landscape Alliance
- Doak Marasco, President, International Society of Arboriculture, New England Chapter
- Peter Mezitt, President, Massachusetts Nursery and Landscape Association
- Kristin O'Brien, Coordinator, Sudbury-Assabet-Concord Cooperative Invasive Species Management Area
- Margaret O'Gorman, President, Wildlife Habitat Council
- David O'Neill, President, Massachusetts Audubon Society
- Joe Szczechowicz, President, Massachusetts Association of Lawn Care Professionals
- Steve Seymour, Executive Director, GreenCAPE
- Warren Shaw, President, Massachusetts Farm Bureau Federation
- Mark Smith, President, Grow Native Massachusetts
- Ed Stockman, Co-Founder, Regeneration Massachusetts
- Steve Ward, President, Cape Cod Cranberry Growers' Association
- Kate Wilson, President, North American Invasive Species Management Association

Selected Contacts from State Government Agencies and Universities in Massachusetts

- George Batchelor, Supervisor of Landscape Design, Massachusetts Department of Transportation
- Brian Hawthorne, Habitat Program Manager, MassWildlife
- Dr. Randall Probst, Extension Weed Specialist, University of Massachusetts Extension
- Nancy Putnam, Director of Ecology, Massachusetts Department of Conservation and Recreation
- Eve Schlüter, Assistant Director, Massachusetts Natural Heritage and Endangered Species Program

The ERG Team plans to update the previous list based on comments received on this report. The ERG Team will also revisit project resources before contacting stakeholders, because the current budget might not allow for contacting every stakeholder on this list. During Phase Two, the ERG Team will contact as many randomly selected individuals from the previous list as project resources will allow. This project's Phase Two report will document that selection process, if it needs to be applied.

5.0 References

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6.0 Abbreviations Used in the Report

AGG	Assessment Group on Glyphosate
APVMA	Australian Pesticide and Veterinary Medicines Authority
ATSDR	Agency for Toxic Substances and Disease Registry
dRAR	draft Renewal Assessment Report
ECHA	European Chemicals Agency
EFSA	European Food Safety Authority
EPA	U.S. Environmental Protection Agency
ERG	Eastern Research Group, Inc.
FSC	Forest Stewardship Council
IARC	International Agency for Research on Cancer
MDAR	Massachusetts Department of Agricultural Resources
NGO	non-governmental organization
NRDC	Natural Resources Defense Council
NSRL	No Significant Risk Level
NTP	National Toxicology Program

OEHHA (California's) Office of Environmental Health Hazard Assessment

PMRA (Canada's) Pest Management Regulatory Agency

RED Reregistration Eligibility Decision

UMass University of Massachusetts

USDA U.S. Department of Agriculture

WHO World Health Organization