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CAP Report Instructions

(Revised 7/1/2022)

Introduction

The Division of Oil and Public Safety (OPS) has designed the Corrective Action Plan (CAP) Report format to be used for the CAP and CAP Modification reports. Please refer to the [CAP Guidance](#) to aid in the preparation of an approvable CAP.

The report format is designed to be complementary to the Release Event's most recent Monitoring and Remediation Report (MRR) or Site Characterization Report (SCR). The CAP includes all proposed remediation and monitoring work, costs and time required to achieve cleanup of the release to below the cleanup goals. The CAP or CAP Modification must be submitted with all required documentation with the expectation that the proposed scope, costs and implementation schedule are ready for review and approval by OPS. Stakeholder communication with OPS is strongly encouraged prior to submittal to discuss the proposed scope, enhance project understanding, minimize scope changes and cost negotiations, and decrease the cleanup time.

The above reports must be submitted in both Excel and PDF format to the [FTP \(File Transfer Protocol\) site](#). Please refer to our [website](#) for FTP uploading instructions.

The electronic document submittals must follow these OPS naming conventions.

- CAP: Site Event ID, two digit year, report name (e.g., 9605-13-CAP)
- CAP Modification: Site Event ID, two digit year, report name (e.g., 9605-13-CAPMod)

Minor adjustments to the scope, cost or implementation schedule may occur following OPS review of these documents. A revised final version of the report must be submitted to OPS once the scope, cost and implementation schedule components are agreed upon. Substantial nonconformance to the CAP Report Instructions and CAP Guidance will result in an outright denial of the requested scope and associated costs.

A brief description of the information to be included and how to enter the information into the worksheets is provided in the sections that follow.

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General Information/Cover Page

Follow these instructions upon opening the Excel file.

1. Select the title of the report you wish to prepare from the drop-down menu on the Cover Page.
2. Select the principal technology proposed to remediate the site.

3. If a CAP Modification, select the purpose of the modification.
4. Enter the Event ID, Release ID, facility address, submittal date, and REP identification for the report.

The existing format and/or formulas included in cells are not altered, moved or copied. Excel sheets with no data must not be deleted from the workbook.

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Narrative

The purpose of the CAP narrative is to summarize release details and contaminant distribution, identify open exposure pathways and associated contaminant concerns, define the areas needing remedial treatment, present a basis of selection and design details for the proposed remedial approach, present performance metrics, remedial milestones and endpoints, and summarize the entire scope of work proposed in the CAP. The CAP narrative should generally summarize the components described in the CAP Preparation section of the OPS [Corrective Action Guidance](#). It is important to note that the CAP narrative differs from the Combined Report narrative in that the CAP narrative should focus on the design and implementation of the proposed remedial approach.

The following components must be included in the CAP narrative.

Contaminant Concerns, Remedial Objectives, and Targeted Treatment Areas

- Clearly identify the open exposure pathways and contaminant concerns associated with the release event that require remedial consideration. Identify which concerns will be addressed with corrective action within the proposed CAP and which concerns will be addressed later with a treatment train approach.
- Clearly identify the remedial objectives for the contaminant concerns that will be addressed with corrective action within the CAP.
- Describe the areas that the contaminant concerns exist. These areas should be supported with figures in the Remediation Figures tab. Access restrictions (physical, logistical, or legal) that may impede the implementation of a remedial approach must be identified in the figures and discussed in the narrative.

Evaluate, Screen Out, and Select the Remedial Technology or Treatment Train

- Present a sound basis of technology selection to achieve the remedial objectives.
 - It is recommended to utilize the process outlined in the Corrective Action Guidance.
 - The Concerns-Technologies and Remedial Technologies tabs should be consulted to populate the Remedial Objectives tab. Contaminant mass estimates should be summarized in the narrative and included in the Remedial Objectives tab, and supporting documentation should be included in the Design Documentation tab.
- Identify the selected remedial approach to achieve the remedial objectives. Refer to the [Appendix](#) for specific instruction on narrative description and design detail depending on the method proposed.
- Identify conceptual treatment train options, as appropriate, to lay out a planned remedial path to event closure.

Identify Performance Metrics, Remedial Milestones and Remedial Endpoints

- Present a SMART (specific, measurable, agreed-upon, realistic and time-based) objective for the selected remedial approach.
- Present the performance metrics, remedial milestones and remedial endpoints for the selected remedial approach.

Scope of Work and CAP Implementation

This section should summarize all work being proposed in the Corrective Action. This includes, but is not limited to, the following items.

- Preparatory activities, including access agreements, permitting requirements, equipment procurement and system installation.
- Refer to the [Appendix](#) for specific instruction on narrative description depending on the method proposed.

- Operation and maintenance (O&M) activities associated with the remedial action, including O&M frequency, tasks to be completed during O&M visits, optimization efforts to be completed during system operation and the duration of system operation.
- The monitoring program, including the monitoring wells and vapor points to be sampled, analytes and the proposed monitoring frequency and schedule. Confirmation soil sampling should also be discussed. A matrix diagram/schedule to illustrate when wells and vapor points will be sampled, when interim and final soil confirmation samples will be collected, and when reports will be submitted is recommended. This matrix could be tied to a similar matrix showing planned O&M visits.
- Monitoring and Remediation Report submittal. Performance metric, remedial milestone and remedial objective evaluation should be used as a basis for determining reporting frequency.
- Summarize system decommissioning and well abandonment activities, if applicable.

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Remedial Objectives

Remedial objectives should be clearly defined based on the identified contaminant concerns. A Contaminant Concerns and Remedial Objectives Table is included in the CAP template. For each of the four contaminant phases (LNAPL, sorbed, dissolved, and vapor), identify whether each of the listed concerns are present. If adequate data are not available to make a determination for a particular concern, “unknown” should be the response. The [Conceptual Site Model](#) (CSM) should identify the appropriate actions to address the unknown concerns (data gaps). The exposure pathways and points of exposure should all be described in the conceptual site model. Each contaminant concern must have a response.

For each concern that is present:

1. Provide the estimate of the contaminant mass (in kg) either by individual compounds and/or as TPH for each phase. The estimating method should be described in the CAP narrative and mass calculations should be included in the Design Documentation.
2. Identify the proposed remedial option. The Remedial Technologies and Concerns-Technologies tabs should be used to support the selected option.
3. Identify which phase of the treatment train the concern will be addressed in. It is likely that several concerns and objectives may be addressed simultaneously with the same technology or a combination of technologies. Concerns and objectives addressed under the first treatment train phase should be identified with a “1.” Objectives to be addressed after the Treatment Train Phase 1 objectives should be identified in the next appropriate phase of remediation (e.g., 2 or 3).

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Remediation Information & Figures

Supporting design documentation is required for any proposed active remediation method (e.g., excavation, mechanical systems, in-situ injection). Refer to the [Appendix](#) for specific design documentation requirements depending on the method proposed. Supporting design documentation must be included as PDF attachments.

Figures that depict proposed wells/borings/etc. must be inserted in the [Sample Location Figures](#) tab.

Targeted treatment areas and corrective action figures must be included on this tab. The following should be depicted:

- Targeted treatment areas in aerial and cross-sectional view. Access restrictions (physical, logistical, or legal) that may impede the implementation of a remedial approach must be identified in the figures and discussed in the narrative. As many targeted treatment area figures as appropriate to depict the contaminant concerns should be included.
- Injection point locations and treatment area for in-situ treatment applications in aerial and cross-sectional views and relative to soil, groundwater and vapor contaminant plumes.

- System layout, including inference of the treated area (radius of influence), in aerial and cross-sectional views and relative to soil, groundwater and vapor contaminant plumes.
- Equipment positioning in and around the enclosure (equipment layout).
- Excavation footprint in aerial and cross-sectional views and relative to soil, groundwater and vapor contaminant plumes.

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Sample Location Figures

Figures that depict the proposed monitoring plan and/or additional wells/borings/etc. must be inserted here.

Examples include:

- A Groundwater Sample Figure depicting the location of all groundwater monitoring wells and proposed sampling locations associated with the release event.
- A Soil Sample Figure depicting the location of all soil samples and proposed soil confirmation samples associated with the release event.
- A Soil Vapor Sample Figure depicting the location of all soil sample locations associated with the release event.

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CAP Implementation Schedule

Enter dates in the table for the start and end of each proposed activity. The graph will be populated by the dates entered. This table needs to be updated by the preparer upon approval by OPS of the CAP/EFS.

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Economic Feasibility Summary (EFS) Form

Complete the EFS form for costs associated with the proposed scope. EFS instructions can be found on our [website](#).

The CAP Effective Date is the date the initial CAP work period started. Please utilize the beginning and end of the first and last quarter in the planned work period as EFS start and stop dates. Reporting costs are based on a “level of effort”:

Groundwater or vapor sampling	Reporting frequency	Level of effort	Corrective action or system O&M during period	TLC
qtr	qtr	1/rpt	no	7.1a
qtr	qtr	1/rpt	yes	7.2a
qtr	semi-annual	2/rpt	no	7.1b
qtr	semi-annual	2/rpt	yes	7.2b
qtr	annual	4/rpt	no	7.1c
semi-annual	semi-annual	1/rpt	no	7.1a
semi-annual	semi-annual	1/rpt	yes	7.2a
semi-annual	annual	2/rpt	no	7.1b
annual	annual	1/rpt	no	7.1a

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TLC Items

The Task & Labor Codes (TLC) tab contains Reasonable Cost Guidelines (RCGs) for specific line items that the consultant can use to build the EFS by copying a TLC line and inserting it into the EFS form. The information is not filled in on the TLC Items tab, but rather on the EFS Form tab.

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CAP Bids

Competitive bids may be required for select subcontracted scopes of work. Refer to Policy 27 found on our [website](#). The bid request(s) and all completed bids must be included as PDF attachments in the CAP Bids tab.

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Overview of Remedial Technologies

To assist the CAP preparer, this table presents a summary of typical remedial methods utilized in Colorado. The table provides a brief description of each method, plus conditions under which the method might best be applied.

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Technologies to Consider to Address Concerns

To assist the CAP preparer, this table presents technologies to consider when addressing contaminant concerns and remedial objectives.

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MNA Feasibility

This worksheet must be completed if MNA is proposed as the recommended treatment option for the release event, or to illustrate that degradation is occurring. Instructions for completing the MNA worksheet can be found on our [website](#).

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Appendix: Remediation Method Required Components

Method	Narrative Design Details	Design Documents
MNA	<ul style="list-style-type: none"> • Identify the estimated biological decay rate as supported by the MNA Feasibility worksheet. • Summarize how existing secondary parameter analysis is supportive of an MNA approach. Identify secondary parameter analysis recommended as a part of the CAP. • Identify the estimated timeframe to cleanup based on existing COC concentrations and the decay rate. • Describe how MNA will be protective of points of exposure. • Discussion of other items pertinent to the design. 	<ul style="list-style-type: none"> • Complete the MNA Feasibility worksheet. • Contaminant mass estimate calculations
Mechanical Systems	<ul style="list-style-type: none"> • Summarize how the pilot test results were utilized to develop the proposed full-scale application. • Summarize vertical and horizontal well construction detail (e.g., materials, screen length and pipe size). • Summarize trench detail including trench dimensions, conveyance pipe size and location within the trench, conveyance pipe material, backfill material, excavated soil volume and excavated soil disposition. • Summarize the bid results and selection process for the Construction Contractor scope of work as included in the CAP Bids worksheet. • Identify major equipment components for the system. • Summarize the bid results and selection process for the Equipment Supplier scope of work as included in the CAP Bids worksheet. • Discuss emissions capture/destruction components associated with the system. Discuss noise and odor abatement considerations as appropriate. • Summarize the days onsite to complete the activities through installation and startup. • Discussion of other items pertinent to the design and/or construction (e.g. weather, access). 	<ul style="list-style-type: none"> • Contaminant mass estimate calculations. • Equipment sizing calculations • Trenching calculations to include length of pipe runs and volume of soils removed. • Emissions/recovery calculations. • Utility (e.g., power usage, water disposal) cost calculations.
In-Situ Injections	<ul style="list-style-type: none"> • Identify the injectate, why this material was chosen over other materials, and how the injectate will effectively degrade or destroy the petroleum contaminants. • Summarize how the pilot test results were utilized to develop the proposed full-scale application. • Identify the vertical and horizontal areas addressed by the in-situ application and identify areas, if any, which are above action levels that are not addressed by the in-situ application. • Summarize the bid results and selection process for the Injection Contractor scope of work as included in the CAP Bids worksheet. • Summarize the in-situ loading estimates as supported by the Design Documentation or CAP Bids. • Summarize the injection plan (e.g., single application, multiple applications [and frequency], or continuous application) and injection equipment. • Summarize the injection delivery method to include anticipated flows and pressure and identify how the pilot test delivery method was utilized to support the recommendation. • Summarize monitoring considerations (e.g., more frequent monitoring beyond the monitoring program, additional analytes and secondary parameters) and how this information will be interpreted and summarized in subsequent reports. • Summarize the days onsite to complete the activities. 	<ul style="list-style-type: none"> • Contaminant mass estimate calculations. • Calculations to estimate the quantity of injectate proposed based on contaminant mass and oxidant demand.

Method	Narrative Design Details	Design Documents
	<ul style="list-style-type: none"> • Discussion of other items pertinent to the design and/or injection(s) (e.g. weather, access). 	
Excavation	<ul style="list-style-type: none"> • Summarize the proposed excavation extent (horizontal and vertical) and volume to be removed. • Summarize how non-impacted soils will be sorted from impacted soils and the proposed final disposition of the non-impacted and impacted soils. • Summarize the type and quantity of proposed fill material to be brought from offsite. • Summarize the type and quantity of surface cover to be impacted, the disposal or recycling plan for the disrupted cover, and the proposed final surface cover. • Summarize the bid results and selection process for the Construction Contractor scope of work as included in the CAP Bids worksheet. • Summarize if any amendments or subsurface piping will be added to the open excavation. Provide the basis for choosing those amendments. • Summarize the days onsite to complete the activities. • Discussion of other items pertinent to the design and/or construction (e.g. weather, access). 	<ul style="list-style-type: none"> • Calculations sheet to estimate the volumetric extent of total soils to be removed. Calculations must also be presented to differentiate between non-impacted and impacted soils. • A materials management plan must be included that details how non-impacted and impacted soils will be sorted and handled throughout the excavation process. • Dewatering estimates, as necessary.
Other	<ul style="list-style-type: none"> • As agreed upon with OPS 	<ul style="list-style-type: none"> • As agreed upon with OPS

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