

Instructions for Classification Exception Area GIS Submissions

GEOGRAPHIC INFORMATION SYSTEMS (GIS) INSTRUCTIONS

Contaminated Site Remediation & Redevelopment

New Jersey Department of Environmental Protection



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Instructions for Classification Exception Area GIS Submissions

The following document will assist a submitter to prepare a submission for a Classification Exception Area (CEA) Geographic Information System (GIS) Deliverable. The specific requirements for GIS deliverables are outlined in the [Administrative Requirements for GIS Deliverables](#) Guidance document. This document supplements [Administrative Requirements for GIS Deliverables](#) with instructions specific to a CEA Submission.

1. Introduction

The New Jersey Ground Water Quality Standards (GWQS), N.J.A.C. 7:9-6, provide the basis for the protection of the ambient ground water quality of the State through the establishment of constituent standards for ground water pollutants. The GWQS recognizes the different natural utility of ground waters in various parts of New Jersey and classifies ground water according to a combination of natural characteristics and actual or potential uses. Protected designated uses are specified for each classification area. The GWQS also includes a provision for the Department to designate areas of exception to strict application of the GWQS as part of a pollution remedy conducted pursuant to an ACO or other Department oversight mechanism or program. This institutional control is called a CEA. A CEA is established after the ground water contamination that exceeds the GWQS is fully delineated. It's the mechanism that Contaminated Site Remediation & Redevelopment (CSRR) uses to identify the areas where there is an exception to the ground water use that has been established in the GWQS.

For remedial cases with ground water contamination, a CEA / Well Restriction Area (WRA) Fact Sheet Form is submitted at the completion of the Remedial Investigation Phase and when establishing a Remedial Action Permit (RAP) for Ground Water (GW). The [Administrative Requirements for the Remediation of Contaminated Sites](#) (N.J.A.C. 7:26C-7.3(c).1) requires the submittal to include a map of the CEA in a GIS compatible format. The CEA boundary should be submitted as an Esri shapefile or a Computer-Aided Design (CAD) dwg or dxf file. Once established, the CEA boundaries are provided to the public and well drillers as a GIS layer in [NJ GeoWeb](#) to identify those areas of the state where ground water contamination potentially may be encountered.

2. GIS Submission

The GIS compatible map, which is referred to as a “*GIS Deliverable*” includes all CEAs that are identified in the CEA/WRA Fact Sheet Form. If the request is to revise an existing CEA and the boundary does not change, then a CEA Submission may not be required. Check NJ GeoWeb to view the CEA boundary. If the CEA boundary is accurately mapped in NJ GeoWeb, then a GIS Submission is not required. Exhibit C under Section B.5. of the [CEA/WRA Fact Sheet Form](#) and Section F.3. of the RAP - GW Application, if applicable, should be filled out correctly documenting that you looked on NJ GeoWeb.

If a GIS Deliverable is required, the Deliverable should not be submitted with the CEA/WRA Fact Sheet Form. It should be submitted directly to CSRR's GIS unit using a different process. When the CEA/WRA Fact Sheet Form is sent to CSRR, the GIS Deliverable should be attached to an email and sent to srpgis_cea@dep.nj.gov. The submitter should also attach a PDF version of the CEA map to the email and the metadata to the body of the email. The email should comply with the following strict format to reconnect the GIS deliverable to the form. The subject line and email body are used by CSRR to identify the deliverable. The acronym CEA is used to identify a

submission as Classification Exception Area Submission Type.

2.1 Email Subject Line

The subject line of the email should contain the Program Interest Number and Submission Type Acronym, separated by a comma.

Example: 013164, CEA

2.2 Email Body (Metadata)

The required basic information about the Deliverable should be included in the body of the email. This information, which is referred to as metadata, identifies: 1) the environmental company / LSRP (consultant) overseeing the work, 2) the professional who created the GIS submission and who could be contacted if there are GIS technical issues, and 3) the site identification information. The metadata should be included in the email as a series of fields that includes the information for the submittal. The user should copy the [metadata templates](#) from the [GIS Deliverable Templates](#) web page or fields listed in figure 1 into the email and complete the information.

Figure 1. Metadata requirements. The required fields listed below need to be copied into the body of the email and the appropriate information completed for each field.

Program Interest Number for Site:
Activity Number:
Name of Site as known to NJDEP:
Street Address of Site:
Municipality of Site:
County of Site:
Submission Type Acronym:
Submission Description:
Name of LSRP (or consultant) overseeing work:
LSRP's License Number:
LSRP's Email Address:
Name of GIS Author Company:
Mailing Address:
Name of Professional performing GIS work:
Email for Professional performing GIS work:
Phone Number for Professional performing GIS work:

2.3 Spatial Accuracy

The accuracy of the GIS Deliverables must meet the standards established by the Department in the NJDEP Mapping and Digital Data Standards (current version issued on February 7, 2021).

2.4 PDF CEA Map

The submitter should attach a PDF version of the CEA map to the email. The information on the CEA map should support the features in the GIS Deliverable.

2.5 Resubmission of failed GIS Submission

If the CEA Deliverable is not acceptable, an email response to the submitter will identify the issues and how to resubmit the GIS Deliverable.

3. GIS Deliverable

The GIS Deliverable shall be submitted as a GIS shapefile or a georeferenced .dwg or .dxf CAD

drawing file utilizing the New Jersey State Plane Coordinate System, North American Datum of 1983 (NAD83), using feet as the units of measure. The deliverable should consist of polygon(s) that represent the horizontal extent of the CEA(s).

3.1 CEA GIS Deliverable Naming Protocol

The CEA GIS Deliverable should be named as the Program Interest number of the CSRR case followed by an underscore and then the date of submission (YYYYMMDD) followed by CEA, which is the valid Submittal Type Acronym for this submission type (figure 2). If there are multiple CEA submissions being submitted for the same Program Interest, then the files should be numbered sequentially [i.e., CEA1, CEA2, etc.].

Figure 2. Examples of the File Naming Protocol for a CEA GIS Deliverable

<u>File Naming example for CEA submission:</u>	
Site Name:	ABC Industry
Program Interest number:	013164
Date of Submittal:	April 1, 2017 (in yyyyymmdd format)
 <u>Correct File Name for this example:</u>	
013164_20170401CEA	
 <u>For multiple submissions:</u>	
013164_20170401CEA1	
013164_20170401CEA2	

3.2 GIS Deliverable Types

A GIS Deliverable is submitted as either a GIS shapefile or CAD drawing file. The shapefile is the preferred format for all CSRR GIS submittals since it is easily imported into GIS. A shapefile is an open geospatial vector data format for GIS software. It can be created by several different GIS software programs. A CAD drawing is a group of points, lines, polylines, and text that are organized by layers to produce technical drawings. Each drawing feature contains information used to produce the drawing such as line weight, line type and color. This format can be used to produce a GIS Deliverable provided several guidelines are followed. A CAD file must be carefully prepared for the conversion into a GIS usable format to be successful. All CEA GIS Deliverables should conform to the structure, or schema, outlined in the [Administrative Requirements for GIS Deliverables](#).

3.3 GIS Deliverable Schema

The GIS Deliverable must show all the CEAs that are included in the CEA/WRA Fact Sheet Form. These features should be drawn as polygons and included in one deliverable. The file structure in the tables below should be used to generate the Deliverable depending on if it is a shapefile or CAD drawing.

The attribute values for the polygons must correspond to the information contained in the CEA/WRA Fact Sheet Form.

3.3.1 Shapefile Schema

The schema in table 1 should be used when creating a shapefile as a CEA Deliverable. The shapefile should include only the CEA boundaries; do not include other shapes such

as Tax Parcels or streets. Problems may be caused by including additional features that are not related to the CEA boundary in the shapefile Deliverable. When completing the attribute table, the Type field is used to identify the CEA boundary polygon. The Descript field is used to describe the CEA.

A [CEA Shapefile Template](#) is available for download from CSRR’s [GIS Deliverables Templates](#) web page.

Table 1. CEA Shapefile Schema

Field Name	Type	Length	Description	Valid Values
FID	Object ID	-	Esri unique identifier	n/a
Shape	Geometry	-	Esri geometry field	n/a
Type	Text	50	What the shape (feature) represents	CEA Boundary
Descript	Text	100	Short description of the CEA	n/a

3.3.2 CAD File Schema

The schema in table 2 should be used when creating a CAD file as a CEA Deliverable. The CAD file may include features other than the CEA boundary, but the best submittal practice is to create a CAD file that only includes the polygons associated with the CEA/WRA Fact Sheet form. The value in the Layer field identifies the CEA boundary polygon. For the CEA Boundary polygon, the value of the Layer field should be “CEA Boundary.” Please do not name any other point, polyline, annotation, graphic, or any other map element in this way. The Descript field should be added to the CAD drawing and completed as outlined below. The CAD values for the polygon of concern must correspond to the information contained in the submitted form.

Table 2. CEA CAD Drawing Schema

Field Name	Type	Length	Description	Valid Values
Layer	Text	50	What the shape represents	CEA Boundary
Descript	Text	100	Description of the CEA	n/a

The GIS Deliverable must be georeferenced and should be defined in “model space.” CAD drawings with a locally established point of origin (0,0) are not acceptable as these have not been georeferenced to the NJ State Plane Coordinate System and if submitted, will be returned for correction. The CEA feature in the CAD drawing must be a polygon.

Additional [CAD Help](#) is provided on CSRR’s GIS web page under Guidance Documents and in the [Administrative Requirements for GIS Deliverables](#).

4. GIS Submittal Example

There are two different examples for CEA Deliverables: shapefile and CAD file. Both are for a fictitious ABC Industry site with a Preferred ID of 013164. The shapefile example is for a shallow and deep plume; hence, there are two distinct CEAs. The GIS Deliverable needs a polygon for each CEA that is being established. The two shapes will be submitted as one Submission. The Deliverable was created on April 1, 2017.

4.1 Deliverable examples

If the CEA is already established, then check Groundwater Contamination Areas (CEA) in NJ GeoWeb to view the CEA boundary. If the CEA boundary is not in NJ GeoWeb or is incorrect, then a GIS Deliverable should be submitted. If the CEA boundary is already in NJ GeoWeb and is correct, then a GIS Deliverable does not have to be resubmitted, but the form(s) should be filled out correctly documenting that you looked on NJ GeoWeb.

4.1.1 CEA Shapefile Deliverable

To complete the Deliverable, the CEA shapefile template was downloaded from the web site and added to a GIS application. Two polygon features were digitized, one for the shallow plume and one for the deep plume (figure 3). The fields in the attribute table (table 3) were filled in based on information in the CEA/WRA Fact Sheet form. A value of “CEA Boundary” was entered into the Type field in the attribute table, which is used to identify the CEA shape. The CEA descriptions were inputted into the Descript field. The length of the Descript field is 100 characters, but only a short description is required.

Instead of downloading the CEA template from the web, a user could create a shapefile from scratch following the schema presented in table 1 in a GIS application.

Figure 3. Map of the Shapefile used in CEA Deliverable example. The two polygons depict the Shallow and Deep Plume at the fictitious ABC Industry Site

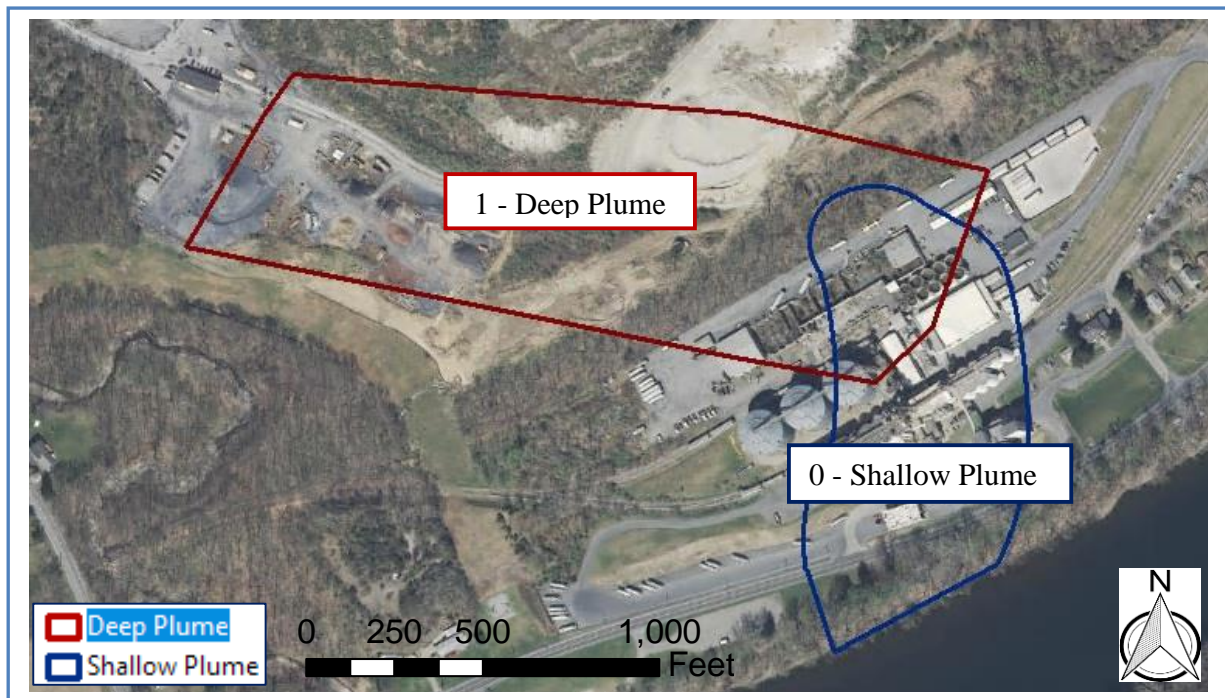


Table 3. GIS attribute table for the CEA Deliverable shown in figure 3.

	FID	Shape	Type	Descript
	0	Polygon	CEA Boundary	Shallow Plume
	1	Polygon	CEA Boundary	Deep Plume

4.1.2 CEA CAD file Deliverable

A CAD deliverable has some minor differences from a shapefile deliverable. A CAD file may be used for several different purposes and is usually retrofitted to become a GIS Deliverable by georeferencing the drawing and adding the CEA boundary features into an existing CAD file. Additional features (polygons) other than the CEA boundary are permitted in a CAD file, but it is suggested that a clean CAD drawing be created with only the polygon(s) of concern. All CAD files must be georeferenced.

To complete the example CAD Deliverable:

- Use an existing CAD file for the site.
- Import DEP Imagery into CAD file and georeference the drawing. The [CAD Help](#) section of CSRR's GIS web page has guidance on importing Imagery and georeferencing.
- Add a field named 'Descript' to the CAD file.
- Add two CEA boundaries to the CAD file (figure 4). The features must be polygons, they cannot be a series of line segments.
 - For the Shallow Plume, enter 'CEA Boundary' into the layer field and 'Shallow Plume' into the Descript field.
 - For the Deep Plume, enter 'CEA Boundary' into the layer field and 'Deep Plume' into the Descript field.
- Use the Purge and Explode commands, if necessary, to clean the drawing and improve the uploading into GIS.
- Name the file using the protocol in Section 3.1 (013164_20170401CEA.dwg for this example)

Figure 4. Drawing of the CAD file used in the CEA example. The CAD Drawing includes multiple features including the Shallow and Deep Plume features.

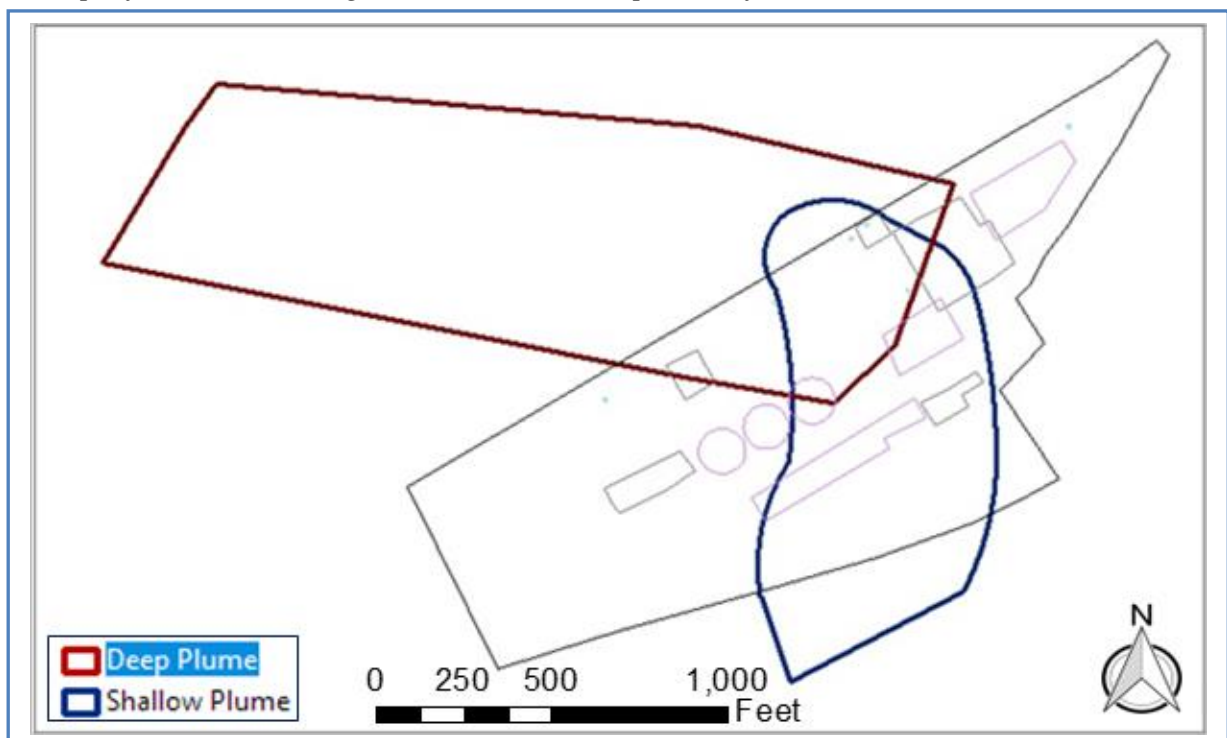


Table 4. Example of the CAD table (as shown in GIS) for the CEA shown in figure 4.

FID	Shape	Entity	Layer	Descript	Color	Linetype	Line Wt	RefName
1	Polygon	Insert	ENV_MW		251	Continuous	0	
2	Polygon	Insert	ENV_MW		251	Continuous	0	
3	Polygon	Insert	ENV_MW		251	Continuous	0	
4	Polygon	Insert	ENV_MW		251	Continuous	0	
5	Polygon	LWPolyline	BSM_BLDG		251	Continuous	0	
6	Polygon	LWPolyline	BSM_BLDG		251	Continuous	0	
7	Polygon	LWPolyline	BSM_BLDG		251	Continuous	0	
8	Polygon	LWPolyline	BSM_BLDG		7	Continuous	25	
9	Polygon	LWPolyline	ENV_AOC		92	Continuous	25	
10	Polygon	LWPolyline	ENV_AOC		92	Continuous	25	
11	Polygon	LWPolyline	ENV_AOC		92	Continuous	25	
12	Polygon	LWPolyline	ENV_AOC		92	Continuous	25	
13	Polygon	LWPolyline	ENV_AOC		92	Continuous	25	
14	Polygon	LWPolyline	Prop_Boundary		150	Hidden	0	
15	Polygon	LWPolyline	CEA Boundary	Shallow Plume	150	Hidden	0	
16	Polygon	LWPolyline	CEA Boundary	Deep Plume	150	Hidden	0	

4.2 Submittal (email)

Once the GIS Deliverable is created and the CEA/WRA Fact Sheet form has been submitted, the Deliverable could be submitted to CSRR using the following steps:

- 1) Open email,
- 2) Attach the GIS Deliverable (either shapefile or CAD file) to the email,
- 3) Attach the PDF map of the CEA,
- 4) Fill out the subject line correctly ('013164, CEA' for this example),
- 5) Copy the metadata section into the email and complete as needed, then
- 6) Email to srpgis_cea@dep.nj.gov

A completed email for this fictitious ABC Industry site is shown in figure 5.

Figure 5. Example of email sent to CSRR. The attached Deliverable is a shapefile.

