

MAP GUIDELINE

This document provides information to help Operators assemble permit maps and boundary coordinates that meet the requirements of the Opencut Mining Act (MCA Title 82, chapter 4, part 4) and its implementing rules (ARM Title 17, chapter 24, subchapter 2). The primary purpose of the maps and coordinates is to document and display the site's physical location and approved permit boundaries. The maps also display existing and proposed features of the site, the surrounding area, and the proposed operation. The maps are critical components of the permit application and constitute legal documents that become part of the permit.

Section I - Boundary Coordinate Requirements

The Opencut Mining Section accepts maps drawn accurately to scale by an Operator or consultant if the maps are based on boundary coordinates obtained using a Global Positioning System (GPS) unit. Alternatively, maps must be drawn accurately to scale by a licensed land surveyor. In either case, the requirements below apply.

1. Maps and boundary coordinates must define the following areas (see attached Example 1–Site Map):
 - a. Existing permit or new proposed permit boundaries
 - b. Non-Bonded & Bonded Areas (note: bonded boundaries defined by default, there is no “Bonded BCT”)
 - c. Permitted Access Roads
 - d. Phase I Release Areas
 - e. Phase II Release Areas
2. Boundary coordinates must be provided as necessary to define the following boundary or line segments:
 - a. Each corner of the permit or the new proposed permit boundary;
 - b. Each point where the direction of the permit or the new proposed permit boundary changes;
 - c. Non-Bonded, Phase I and Phase II Release areas;
 - d. The centerline of permitted access roads that delineates the start and end points, and approximate locations of corners and curves. (Note: one end of the permitted access road must terminate at the permit boundary and the other end of the permitted access road must terminate at a public road.)
3. Submit boundary coordinates to the Opencut Mining Section as follows:
 - a. Operator Provided Coordinates must be provided in **WGS 84 Decimal Degrees**. No other coordinate system will be accepted.
 - b. Provide coordinates in the Microsoft Excel *Boundary Coordinate Table* available at: <https://deq.mt.gov/mining/assistance> (click on the “Forms” tab).
 - c. Coordinates must be listed in geographic sequence, so clear boundaries result from connecting Map ID #1 to Map ID #2 to Map ID #3, etc. (refer to examples below).
 - d. Each operator provided coordinate and its associated Map ID # must be displayed on the Site Map. For example, P1, P2, P3, etc. for Permit boundaries; N1, N2, N3, etc., for Non-bonded boundaries, etc.
 - e. Email the Microsoft Excel *Boundary Coordinate Table* to DEQOpencut@mt.gov with the “Subject” line completed as follows: **BCT (Operator-Site Name)**.
 - f. The Microsoft Excel table is used electronically by the Opencut Mining Section to assess and verify proposed boundaries. As a result, do not include a printout of the table in the paper application or a PDF in a digital application submitted to the Opencut Mining Section’s Helena office.

Section II - Map Criteria

1. The Opencut Mining Section requires that the Site Map, Area Map and Reclamation Map be drawn on the most current air photo base (only the Location map is required for the *Dryland Opencut Mining Permit Application*). The most current air photo base is available at various internet websites including (but not limited to):

- Opencut Mining Public WMA
<https://mtdeq.maps.arcgis.com/apps/webappviewer/index.html?id=47a9175031b343c0b77ee9b67330b679> (click on the “Web Mapping Application” tab)
 - <http://maps.google.com/>
2. Create a Site Map at a readable scale that is zoomed in as close as possible to the proposed permit boundary. It is more important to ensure the site map is zoomed in as close to the proposed permit boundary as possible, than it is too also display the entire length of the access road on the site map. The entire length of access road in relation to the permit boundary can be displayed on a different map (i.e. Area Map).
 3. Create an Area Map at an appropriate scale to show all pertinent features within 1,000 feet of the proposed permit boundary and within 500 feet of permitted access road.
 4. Create a Reclamation Map to show the postmining topography, each proposed postmining land use, the area(s) where it will occur, and other applicable features that will remain at the site when reclamation is completed (i.e. how it will look at final reclamation). Ensure the reclamation map is zoomed in as close to the proposed permit boundary as possible.
 5. Create a Location Map to show the site’s location in relation to the nearest town to allow the public to locate the proposed site MCA 82-4-432(2)(a)(iv) & 82-4-432(5)(c) & 82-4-432(14)(a)(viii). Label roads from the nearest town to the site on the Location Map. The Location Map can be shown on an aerial photo or topographic background.
 6. No required map information can be within ½-inch of the sheet edge.
 7. Unless submitted in electronic format, maps must be submitted on paper no larger than 8 ½ x 11 or as otherwise approved by the Department.
 8. Each map must include the information listed below.

Section III - Map Labels & Features

ALL MAPS –The map must include the following items:

1. Map Title
2. Operator Name
3. Site Name
4. Bar Scale
5. Date of Drafting
6. North Arrow
7. Legend identifying features
 - a. **Note:** Legends are a useful tool used to explain what the symbols and line types denoted on a map represent. A legend defines the symbols or colors (including shades of gray and patterns) used on the map. It must be clear what each marker or line type, weight and pattern represents. Text cannot be used in lieu of displaying the symbol in the legend (e.g. black line = stockpile & green dot = soil test pit; are not acceptable). In addition, do not use shading on the map as it reduces the ability to view the aerial background.

SITE MAP (not required for *Dryland Opencut Mining Permit Application*) - Must show and identify the following existing and proposed features as applicable:

- (a) permitted access roads;
- (b) permit boundaries;
- (c) bonded area boundary;
- (d) non-bonded area boundary;
- (e) excess overburden and fines disposal sites;
- (f) sedimentation ponds and other water quality control structures;
- (g) staging areas;

- (h) sight and sound barriers and berms;
- (i) soil stockpile areas;
- (j) overburden stockpile areas;
- (k) material stockpile areas;
- (l) processing facilities including approximate locations of:
 - (i) crusher
 - (ii) asphalt plant;
 - (iii) wash plants; and
 - (iv) concrete plant;
- (m) detention/retention ponds;
- (n) concrete and asphalt recycling stockpile area(s);
- (o) soil and overburden test hole and observation point locations;
- (p) existing and proposed monitoring well locations (if within permit boundary);
- (q) water system and structures including:
 - (i) supply wells;
 - (ii) water recycling and settling ponds;
 - (iii) surface water extraction points;
 - (iv) discharge points for water used in opencut operations; and
 - (v) all surface waters including, but not limited to, ponds, lakes, wetlands, and defined and/or eroded channels of waterways including, but not limited to, rivers, creeks, intermittent streams, drainages, ditches, and other waterways;
- (r) above and below ground utilities and easements;
- (s) historic disturbances within or adjacent to permit area boundary;
- (y) the data point and map identification number for each pair of coordinates the operator provided on the boundary coordinate table; and
- (u) any other pertinent features that are necessary to ensure compliance with the Act and rules.

AREA MAP (not required for *Dryland Opencut Mining Permit Application*) - Must show and identify the following features within 1,000 feet outside of the permit boundary:

- (a) roads leading to the site;
- (b) access roads from the public road turnoff to the permit area (if roads go beyond the area map, show the full extent on the location map);
- (c) water wells;
- (d) natural and man-made drainage features including, but not limited to, ephemeral, intermittent, and perennial streams, wetlands, ponds, springs, ditches, and impoundments in and within 500 feet of access roads and show the defined and/or eroded channel of any such feature and any setback areas, along with a description of the use of any man-made feature;
- (e) other opencut operations;
- (f) above and below ground utilities;
- (g) significant geographical features;
- (h) residential areas and structures that could be impacted by opencut operations, such as inhabitable/occupied dwellings and commercial and industrial facilities; and
- (i) any other pertinent features that are necessary to ensure compliance with the Act and rules.

RECLAMATION MAP (not required for *Dryland Opencut Mining Permit Application*) - The intent of this map is to show and label features that will remain at the site when reclamation is completed (i.e. how it will look at final reclamation). A Reclamation Map is required to clearly show the following postmining reclamation features:

- (a) all postmining land uses;

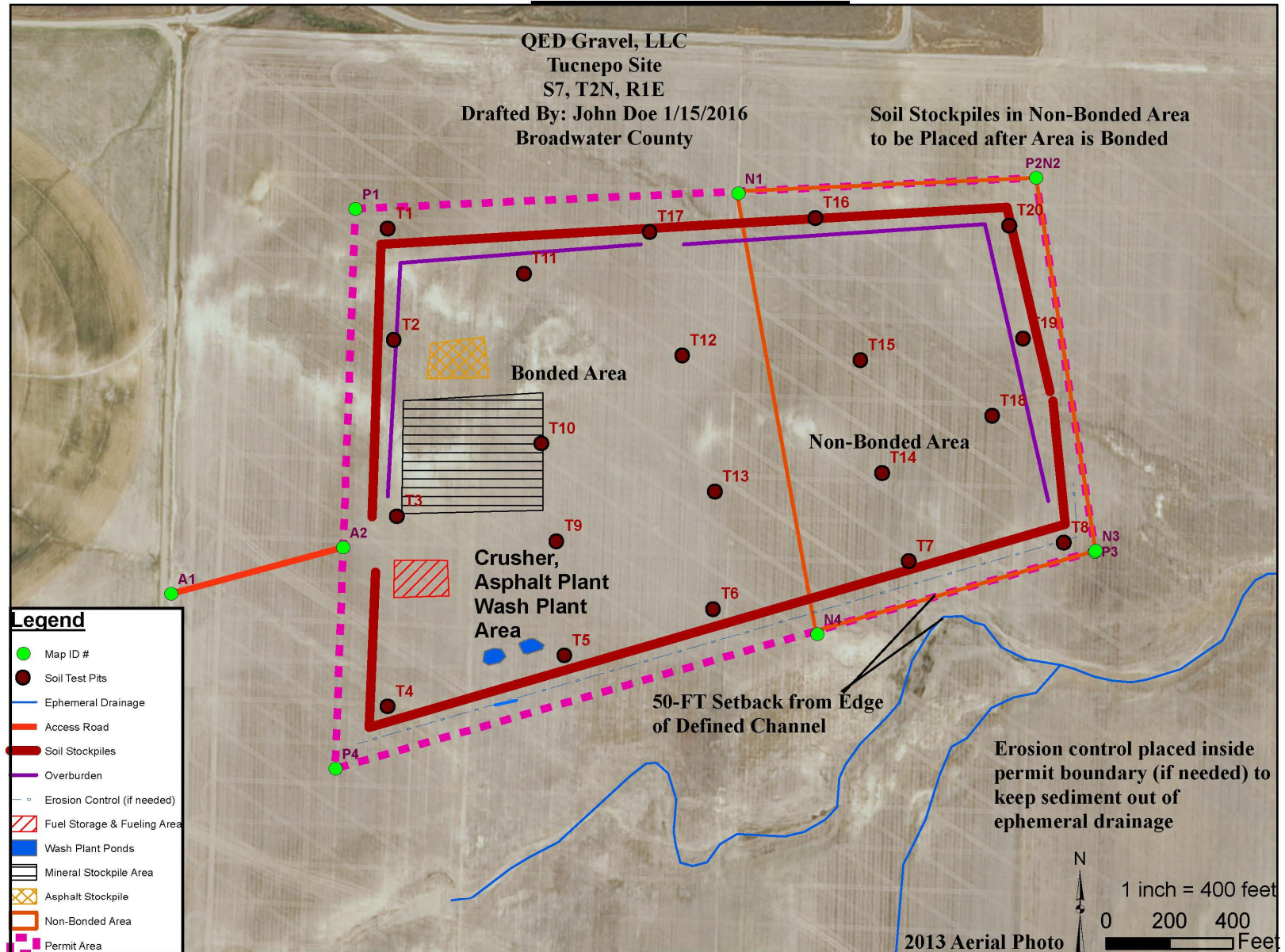
- (b) mined area backfill sites;
- (c) landowner material stockpile areas to remain;
- (d) all roads or portions of roads proposed to remain open, at the request of the landowner, at the conclusion of opencut operations, including road locations;
- (e) long and short axis cross-sections of any pond or depression in which water is expected to collect;
- (f) arrows depicting the anticipated direction of water flow across the reclaimed site; and
- (g) any other pertinent features that are necessary to ensure compliance with the Act and rules.

LOCATION MAP (Required for *Standard and Dryland Opencut Mining Permit Applications*)– The intent of this map is to meet MCA 82-4-432, which requires the operator to provide a map showing the location of the proposed operation sufficient to allow the public to locate the proposed site. The Location Map may be displayed on an aerial or topographic background and must show the site’s location in relation to the nearest town or city. Roads must be labeled from the nearest town to the site on the Location Map.

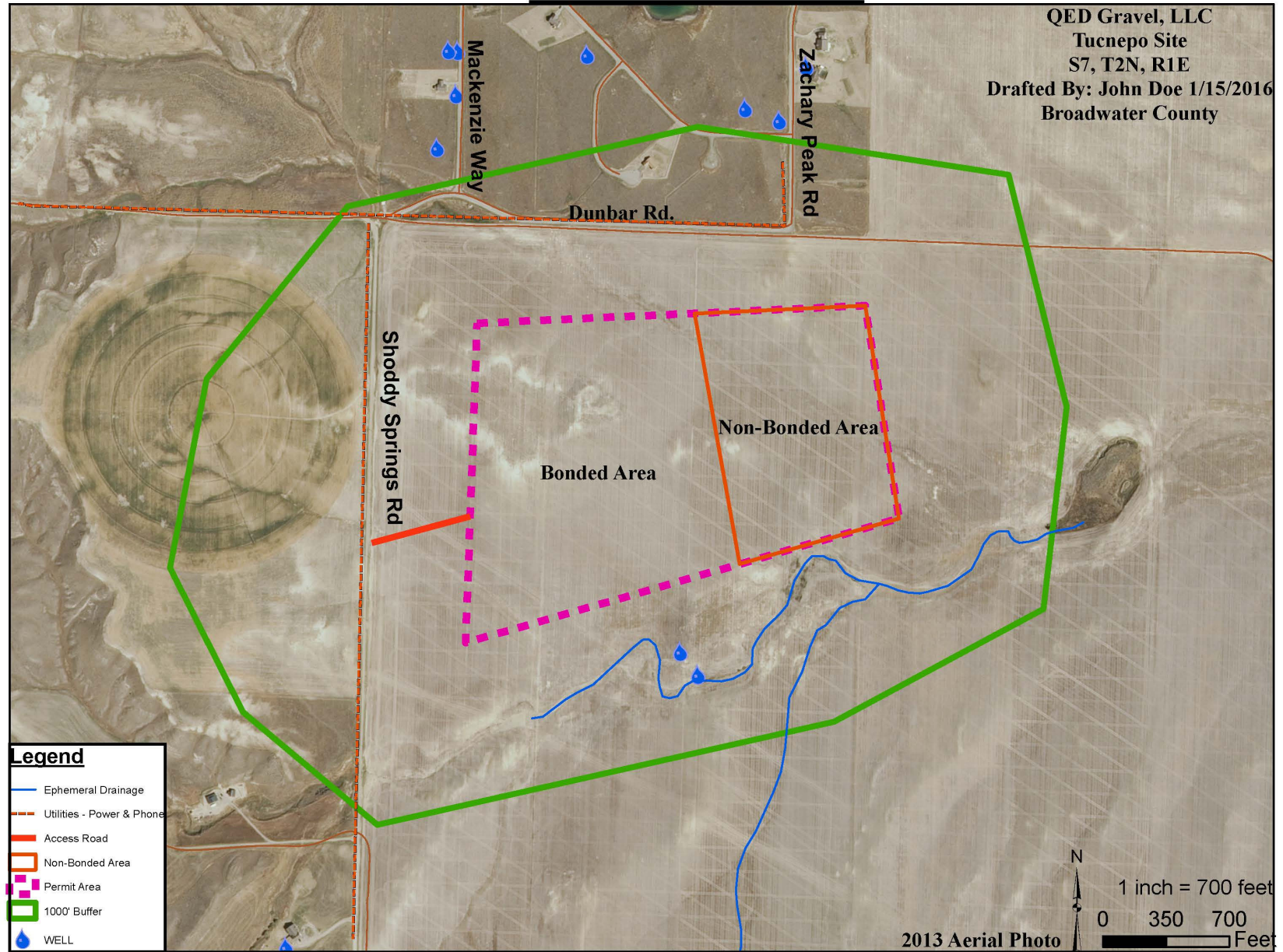
LEGENDS – Legends are a useful tool used to explain what the symbols and line types denoted on a map represent. If a legend is used, the Operator must display the symbol or line type that denotes a feature or features on the map with text explaining what the symbol or line type is. Text **cannot** be used in lieu of displaying the symbol in the legend (e.g. black line, green dot). Refer to the below example for a proper way to utilize a legend:



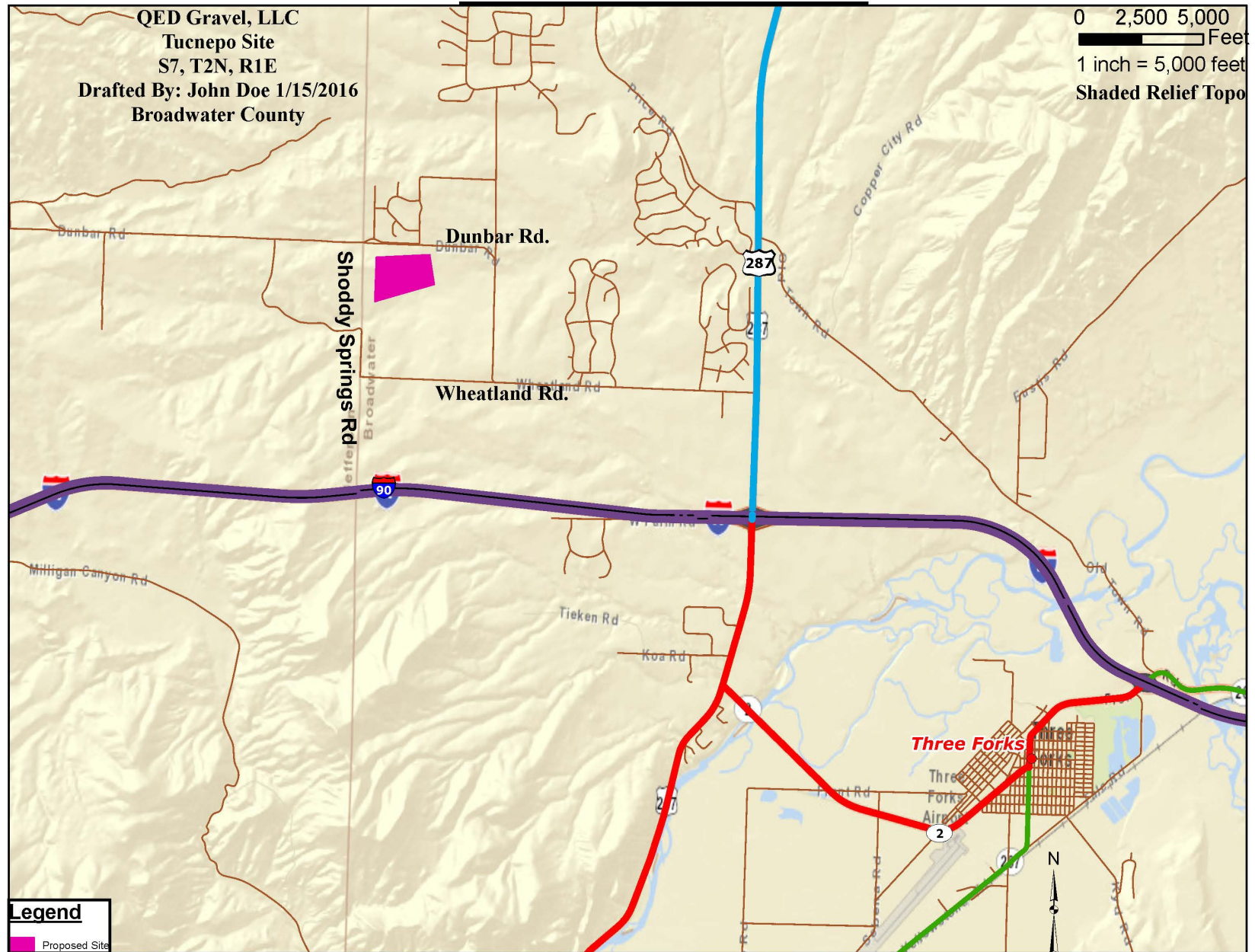
EXAMPLE SITE MAP



EXAMPLE AREA MAP



EXAMPLE LOCATION MAP



Example 5 – Boundary Coordinate Table

OPERATOR PROPOSED PERMIT BOUNDARY COORDINATES TABLEPurpose of this Boundary Coordinate Table: **Permit Application**

- 1) Use this form to submit coordinates to delineate the **Operator Proposed Permit Boundary**.
- 2) One Operator Proposed Permit Boundary Coordinate Table form cannot be submitted to depict multiple Permit Boundaries. If delineating multiple Permit Boundaries, use separate Operator Proposed Permit Boundary tables to identify each separate Permit Boundary.
- 3) When providing coordinates for an **Amended** Permit boundary, you must include coordinates that delineate the *entire* new Operator Proposed Permit Boundary (i.e. one proposed boundary that encompasses both the existing permitted boundary and proposed amendment area).
- 4) If **Bonded** and **Non-Bonded** area is present, complete the **Operator Proposed Non-Bonded Boundary Coordinate** table **in addition** to the **Operator Proposed Permit Boundary Coordinates** table (i.e. this form).
- 5) All boundaries are created automatically by a computer program therefore, all coordinates **must** be in geographic sequence, so that the Operator Proposed Permit Boundary is created by connecting Map ID #P1 to Map ID #P2 to Map ID #P3, etc. The last Map ID # in the BCT would connect to the first Map ID# to complete the boundary. The Map ID# for each coordinate (e.g. P1, P2, P3 etc.) must be shown on the site map. Coordinates must be submitted in **Decimal Degrees** and **WGS 84** datum and include a negative longitude to plot in Montana.
- 6) Provide only those coordinates needed to delineate the proposed boundary. **Do Not** provide coordinates for any other features (e.g. screen, test holes, asphalt plant, etc.), and **Do Not** leave blank rows in between coordinates in the BCT. Providing coordinates for additional features or leaving spaces will result in a boundary that cannot be drawn and the BCT will be deemed incomplete and/or deficient.
- 7) Only put numerical coordinates in the Latitude or Longitude boxes (i.e. no "N" or "W"), or this BCT will not be accepted. Coordinates must be in decimal degree format and provided to the fifth decimal point.
Example: Latitude 46.58946 & Longitude -112.00480.
- 8) Email the completed Microsoft Excel table to: DEQOpencut@mt.gov with "Subject" line: **BCT (Operator-Site Name)**. Do **not** include a printed version of this table with the paper application submitted to the Program's Helena office.

Operator Name:		Qed Gravel, LLC	
Site Name:		Tucnepo	
Permit # (if not a new app)	9999	Date:	1/15/2016

MAP ID#	LATITUDE	LONGITUDE	DESCRIPTION (not required)
P1	45.94554	-111.65813	
P2	45.94596	-111.64966	
P3	45.94274	-111.64883	
P4	45.94068	-111.65817	
P5		-	
P6			
P7		-	
P8		-	
P9		-	
P10		-	
P11		-	
P12		-	
P13		-	
P14		-	
P15		-	
P16		-	
P17		-	
P18		-	
P19		-	
P20		-	

OPERATOR PROPOSED ACCESS ROAD COORDINATES TABLE

- 1) Use this form to submit coordinates to delineate an **Access Road**. An access road would only be permitted if the Landowner requested the access road to be permitted on the Landowner Consultation form.
- 2) One Operator Proposed Access Road Coordinate Table form cannot be submitted to depict multiple roads. If delineating multiple Access Roads, use separate Operator Proposed Access Road tables to identify each separate access road.
- 3) When providing coordinates for an **Access Road**, you must include coordinates that delineate the centerline of the Access Road. The Operator Proposed Access Road Boundary Coordinate Table would be used to delineate the road from the nearest public access to its connection to the permit boundary.
- 4) **Do NOT** use this form to delineate internal roads. This form is for Operator Proposed Permitted Access Roads only.
- 5) All roads are created automatically by a computer program therefore, all coordinates **must** be in geographic sequence, so that the Operator Proposed Access Road boundary is created by connecting Map ID #A1 to Map ID #A2 to Map ID #A3, etc. The Map ID# for each coordinate (e.g. A1, A2, A3 etc.) must be shown on the site map. Coordinates must be submitted in Decimal Degrees and WGS 84 datum and include a negative longitude to plot in Montana.
- 6) Provide only those coordinates needed to delineate the proposed boundary. **Do Not** provide coordinates for any other features (e.g. internal road, etc.), and **Do Not** leave blank rows in between coordinates in the BCT. Providing coordinates for additional features or leaving spaces will result in a boundary that cannot be drawn and the BCT will be deemed incomplete and/or deficient.
- 7) Only put numerical coordinates in the Latitude or Longitude boxes (i.e. no "N" or "W"), or this BCT will not be accepted. Coordinates must be in decimal degree format and provided to the fifth decimal point.
Example: Latitude 46.58946 & Longitude -112.00480.
- 8) Email the completed Microsoft Excel table to: DEQOpencut@mt.gov with "Subject" line: **BCT (Operator-Site Name)**. Do **not** include a printed version of this table with the paper application submitted to the Program's Helena office.

Operator Name:	QED Gravel, LLC		
Site Name:	Tucnepo		
Permit # (if not a new app)	9999	Date:	1/15/2016

MAP ID#	LATITUDE	LONGITUDE	DESCRIPTION (not required)
A1	45.94217	-111.66027	
A2	45.94257	-111.65815	
A3		-	
A4		-	
A5		-	
A6		-	
A7		-	
A8		-	
A9		-	
A10		-	
A11		-	
A12		-	
A13		-	
A14		-	
A15		-	
A16		-	
A17		-	
A18		-	
A19		-	
A20		-	

OPERATOR PROPOSED NON-BONDED BOUNDARY COORDINATE TABLE

Private Operators bonding the entire site would **not** use this table.

Counties and other Government agencies not required to post a bond would **not** use this table.

Use the **Operator Proposed Permit Boundary Coordinate** table to depict the operator proposed permit boundary.

1) Use this form to submit coordinates to delineate the Operator Proposed Non-Bonded boundary only. By default, the remaining area would be the Bonded area.

2) One Operator Proposed Non-Bonded Boundary Coordinate Table form cannot be submitted to depict multiple Non-Bonded boundaries. If delineating multiple Non-Bonded boundaries, use separate Operator Proposed Non-Bonded Boundary Coordinate Tables to identify each separate Non-Bonded boundary.

3) This table must be submitted in conjunction with the Operator Proposed Permit Boundary Coordinate Table, which delineates the entire proposed permit boundary, except when the existing permit boundary is not changing. If the permit boundary is already defined by coordinates and isn't changing, do not resubmit an Operator Proposed Permit Boundary Coordinates Table.

4) All boundaries are created automatically by a computer program therefore, all coordinates **must** be in geographic sequence, so that the Operator Proposed Permit Boundary is created by connecting Map ID #N1 to Map ID #N2 to Map ID #N3, etc. The last Map ID # in the BCT would connect to the first Map ID# to complete the boundary. The Map ID# for each coordinate (e.g. N1, N2, N3 etc.) must be shown on the site map. Coordinates must be submitted in **Decimal Degrees** and **WGS 84** datum and include a negative longitude to plot in Montana.

5) Provide only those coordinates needed to delineate the proposed boundary. **Do Not** provide coordinates for any other features (e.g. screen, test holes, asphalt plant, etc.), and **Do Not** leave blank rows in between coordinates in the BCT. Providing coordinates for additional features or leaving spaces will result in a boundary that cannot be drawn and the BCT will be deemed incomplete and/or deficient.

6) Only put numerical coordinates in the Latitude or Longitude boxes (i.e. no "N" or "W"), or this BCT will not be accepted. Coordinates must be in decimal degree format and provided to the fifth decimal point.

Example: Latitude 46.58946 & Longitude -112.00480.

7) Email the completed Microsoft Excel table to: DEQOpencut@mt.gov with "Subject" line: **BCT (Operator-Site Name)**. Do **not** include a printed version of this table with the paper application submitted to the Program's Helena office.

Operator Name:		Qed Gravel, LLC	
Site Name:		Tucnepo	
Permit # (if not a new app)		9999	Date: 1/15/2016
MAP ID#	LATITUDE	LONGITUDE	DESCRIPTION (not required)
N1	45.94578	-111.65339	
N2	45.94596	-111.64966	
N3	45.94274	-111.64883	
N4	45.94199	-111.65226	
N5		-	
N6			
N7		-	
N8		-	
N9		-	
N10		-	
N11		-	
N12		-	
N13		-	
N14		-	
N15		-	
N16		-	
N17		-	
N18		-	