

## Section 1: ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

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**Site Name:** Lisbon Valley Mine Sites  
**Previous Names (if any):** Not applicable

**Site Location:** Lisbon Valley Mine Sites consists of seven mine sites generally located south of La Sal in San Juan County, Utah. The approximate locations of the mines are as follows:

- Velvet Mine: (38.1165063, -109.1704628)
- Far West Mine: (38.2516515, -109.2910359)
- Radon Mine: (38.2481835, -109.2878334)
- Columbia Shaft: (38.2319358, -109.2783775)
- La Sal No. 2 Mine: (38.2256015, -109.2649572)
- Small Fry Mine: (38.2288193, -109.2672087)
- McCormick and Standard Mine: (38.1896886, -109.2601858)

**Describe the release (or potential release) and its probable nature:** Copper was discovered in the area in 1892, and mining activities increased in the late 1920s after uranium and vanadium were discovered. Tronox operated in the mining district, and the area was a major producer of both uranium and copper until historic operations in the district ceased in the late 1980s. Waste from historic mining operations are found in surface soils in recreation areas and several ephemeral drainages and arroyos. Over time, contaminated mine waste may have eroded and been released downstream during seasonal storms and large run-off events, leading to the exposure of mine visitors to hazardous substances. Based on initial desktop review, site visits, and input from project partners (Bureau of Land Management and Utah Department of Environmental Quality) these seven sites were chosen to be included in this assessment.

### Part 1 - Superfund Eligibility Evaluation

**If all answers are “no” go on to Part 2, otherwise proceed to Part 3.**

|    |   | YES | NO |
|----|---|-----|----|
| 1. | Is the site currently in CERCLIS or an “alias” of another site?   | X   |    |
| 2. | Is the site being addressed by some other remedial program (Federal, State, or Tribal)?   |     | X  |
| 3. | Are the hazardous substances potentially released at the site regulated under a statutory exclusion (e.g., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?  |     | X  |
| 4. | Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?   |     | X  |
| 5. | Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exists (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA approved risk assessment completed)? |     | X  |

**Please explain all “yes” answer(s).** The site has been added to the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) to allow for this assessment. Because the listing is only for this assessment, Part 2 has been completed.

**Part 2 - Initial Site Evaluation**

For Part 2, if information is not available to make a “yes” or “no” response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

**If the answer is “no” to any of questions 1, 2, or 3, proceed directly to Part 3.**

|  | YES | NO |
|--|-----|----|
| 1. Does the site have a release or a potential to release?                       | X   |    |
| 2. Does the site have uncontained sources containing CERCLA eligible substances? | X   |    |
| 3. Does the site have documented on-site, adjacent, or nearby targets?           | X   |    |

**If the answers to questions 1, 2, and 3 above were all “yes” then answer the questions below before proceeding to Part 3.**

|   | YES | NO |
|---|-----|----|
| 4. Does documentation indicate that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?   |     | X  |
| 5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?  | X   |    |
| 6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (e.g., targets within 1 mile)?  | X   |    |
| 7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site? |     | X  |

**Notes:** A discussion of potential pathways and targets is included in Section 2. Figures are included in Section 3.

**EXHIBIT 1**  
**SITE ASSESSMENT DECISION GUIDELINES FOR A SITE**

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgement when evaluating a site. Your judgement may be different from the general recommendations for a site given below.

| <b>Suspected/Documented Site Conditions</b> |  | <b>APA</b>         | <b>Full PA</b> | <b>PA/SI</b> | <b>SI</b> |     |
|---|--|--------------------|----------------|--------------|-----------|-----|
| 1.  | There are no releases or potential to release.   | Yes                | No             | No           | No        |     |
| 2.  | No uncontained sources with CERCLA-eligible substances are present on site.  | Yes                | No             | No           | No        |     |
| 3.  | There are no on-site, adjacent, or nearby targets.   | Yes                | No             | No           | No        |     |
| 4.  | There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.   | Option 1: APA → SI | Yes            | No           | No        | Yes |
|   |  | Option 2: PA/SI    | No             | No           | Yes       | NA  |
| 5.  | There is an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site.  | Option 1: APA → SI | Yes            | No           | No        | Yes |
|   |  | Option 2: PA/SI    | No             | No           | Yes       | NA  |
| 6.  | There is an apparent release and no documented on-site targets and no documented targets immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site. | No                 | Yes            | No           | No        |     |
| 7.  | There is no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.   | No                 | Yes            | No           | No        |     |

**Part 3 - EPA Site Assessment Decision**

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was “no,” then an APA may be performed and the “NFRAP” box below should be checked. Additionally, if the answer to question 4 in Part 2 is “yes,” then you have two options (as indicated in Exhibit 1): Option 1 -- conduct an APA and check the “Lower Priority SI” or “Higher Priority SI” box below; or Option 2 -- proceed with a combined PA/SI assessment.

|  |  |
|--|--|
| <b>Check the box that applies based on the conclusions of the APA:</b> |  |
| <input type="checkbox"/> NFRAP   | <input type="checkbox"/> Refer to Removal Program – further site assessment needed |
| <input type="checkbox"/> Higher Priority SI                            | <input checked="" type="checkbox"/> Refer to Removal Program - NFRAP               |
| <input type="checkbox"/> Lower Priority SI                             | <input type="checkbox"/> Site is being Addressed as part of another CERCLIS site   |
| <input type="checkbox"/> Defer to RCRA Subtitle C                      | <input type="checkbox"/> Other:  |
| <input type="checkbox"/> Defer to NRC                                  |  |
| <b>Regional EPA Reviewer:</b> _____                                    |  |
| Print Name/Signature   | Date   |

**PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:** No drinking water wells, surface water intakes, permanent or fishable waters, critical habitat, or residents were identified as potential targets. Ex-situ x-ray fluorescence data collected during the May 2021 site reconnaissance indicated concentrations of metals in exceedance of EPA Regional Screening Levels for industrial soil at all mine sites. In addition, at Velvet, McCormick and Standard, Small Fry, and Columbia Shaft, ionizing radiation levels in the drainage areas of the mine sites exceeded background levels. During the May 2021 site reconnaissance, evidence of light recreational use was observed at all mine sites except McCormick and Standard Mine. Depending on the duration of recreation activities, recreators at the mine sites may be exposed to ionizing radiation above the U.S. Nuclear Regulatory Commission total effective dose equivalent (an exposure benchmark based on biological damage to living tissue as a result of radiation exposure).

## Section 2: TARGETS AND PATHWAYS

Appropriate search distances for each target were measured from the individual mine sites.

### Groundwater

One drinking water well was identified approximately 3.78 miles south-southwest of the McCormick and Standard Mine. The well has been inactive since 2004 (U.S. Environmental Protection Agency [EPA] 2015). The well is located on the opposite bank of the Big Indian Wash and is not within the drainage path of the McCormick and Standard Mine.

No other drinking water wells were identified within 4 miles of the mine sites.

### Surface Water

Mean annual precipitation in the area is 14.00 inches (based on data collected at the La Sal, Utah, weather station) (National Oceanic and Atmospheric Administration [NOAA] 2021). No permanent surface waters were identified within the 15-mile Target Distance Limit (TDL) for the mine sites. The 15-stream-mile migration route for each mine consists of intermittent streams.

No surface water intakes or drinking water wells were identified within a ¼-mile buffer of the 15-mile TDL for the mine sites (EPA 2015). Two points of diversion were identified within the ¼-mile buffer of the Velvet Mine 15-mile TDL but are not sourced from Dry Wash. Seven points of diversion were identified within ¼-mile buffer of the Far West Mine and Radon Mine 15-mile TDL. Four of these diversions are sourced from West Coyote Creek and used for irrigation and stock water (Utah Division of Water Rights 2021).

The nearest fishable and permanent water downstream of the mine sites is the Colorado River. The distance and flow path to the Colorado River for each mine site are described in Table 1 and are shown on Figure 2.

**Table 1. Distance to nearest permanent and fishable waters**

| Mine Site                     | Distance to Colorado River | Flow Path   |
|-------------------------------|----------------------------|---|
| <b>Velvet</b>                 | 60.61 miles                | Dry Wash to Big Indian Wash, to Hatch Wash, to Kane Springs Creek, into the Colorado River                      |
| <b>McCormick and Standard</b> | 56.04 miles                | Unnamed intermittent stream to Hatch Wash, to Kane Springs Creek, into the Colorado River                       |
| <b>Small Fry</b>              | 62 miles                   | Big Indian Wash to Hatch Wash, to Kane Springs Creek, into the Colorado River                                   |
| <b>La Sal No. 2</b>           | 61.8 miles                 | Big Indian Wash to Hatch Wash, to Kane Springs Creek, into the Colorado River                                   |
| <b>Columbia Shaft</b>         | 48.36 miles                | Sandstone Draw to Hatch Wash, to Kane Springs Creek, into the Colorado River                                    |
| <b>Radon</b>                  | 36.10 miles                | Unnamed intermittent stream to West Coyote Creek, to Hatch Wash, to Kane Springs Creek, into the Colorado River |
| <b>Far West</b>               | 35.7 miles                 | Unnamed intermittent stream to West Coyote Creek, to Hatch Wash, to Kane Springs Creek, into the Colorado River |

Six wetland areas totaling 6.43 linear miles were identified within 100 feet of the 15-mile TDL for Far West Mine and Radon Mine. No other wetlands were identified within 100 feet of the 15-mile TDLs for the site mines (National Wetland Inventory 2020). No surface water was observed near the mine sites.

No critical habitat was identified within ¼-mile buffer of the 15-mile TDLs. The nearest critical habitat, Mexican spotted owl habitat, is located 2.6 miles west of the Far West Mine 15-mile TDL.

### Soil

Ex-situ x-ray fluorescence (XRF) data was collected at the mine sites between May 11 to 13, 2021. Readings were collected at 5 to 13 locations surrounding each mine site, reporting concentrations of aluminum, arsenic, barium, cadmium, cobalt, copper, iron, lead, molybdenum, selenium, silver, tin, tungsten, uranium, vanadium, and zirconium. Results were compared

to EPA Regional Screening Levels (RSL) for industrial soil. Exceedances for arsenic, lead, uranium, and vanadium are listed in Table 2.

**Table 2. Range of XRF readings for mine sites at which an exceedance was identified for arsenic, lead, uranium, or vanadium**

| Mine Site                          | Results Range by Parameter (ppm) |               |              |                |
|------------------------------------|----------------------------------|---------------|--------------|----------------|
|                                    | Arsenic                          | Lead          | Uranium      | Vanadium       |
| <b>EPA RSL for Industrial Soil</b> | 3                                | 800           | 23.3         | 582.9          |
| <b>Velvet</b>                      | 3 – 9.4                          | --            | 3.4 – 200.3  | 51.8 – 1,275.5 |
| <b>McCormick and Standard</b>      | 2.2 – 6.2                        | --            | 3.6 – 44.5   | --             |
| <b>Small Fry</b>                   | 3 – 4.8                          | --            | 9 – 527.8    | --             |
| <b>La Sal No. 2</b>                | 1.6 – 5.3                        | --            | --           | --             |
| <b>Columbia Shaft</b>              | 2.3 – 5.5                        | --            | 10.2 – 149.7 | --             |
| <b>Radon</b>                       | 4 – 76                           | 4.7 – 2,820.2 | 5.9 – 700.7  | 59.4 – 945.3   |
| <b>Far West</b>                    | 2.8 – 9.2                        | --            | 8.5 – 63.1   | --             |

Notes:

- no exceedance
- EPA U.S. Environmental Protection Agency
- RSL Regional Screening Level
- XRF X-Ray Fluorescence

The mine sites are located in a rural, primarily undeveloped area; no soil exposure targets were identified within 200 feet. With the exception of La Sal No. 2 Mine, access to the sites is unrestricted. Evidence of light recreational use, including spent ammunition casings and campfire remains, was observed at all locations except McCormick and Standard Mine.

### Air

A sulfur-like odor was identified near the mine drainages at Small Fry Mine. The nearest residences are located between 3 and 4 miles north-northeast of Far West Mine in La Sal, Utah. A ridge separates the mines from the residential area. The mine sites are located in a rural, primarily undeveloped area; no airborne exposure targets were identified within 200 feet.

### Radioactivity

Ionizing radiation surveys were conducted at the mine sites between May 11 to 13, 2021, using a Ludlum 2241 Model 44-9 to detect alpha, beta, and gamma emissions. The background, range, mine site average, and drainage average of radiation measured at each mine location is listed in Table 3. The average of readings collected from the drainage was higher than background readings at Velvet, McCormick and Standard, Small Fry, and Columbia Shaft mines.

The U.S. Nuclear Regulatory Commission (NRC) total effective dose equivalent (an exposure benchmark based on biological damage to living tissue as a result of radiation exposure) for the general public is 100 microroentgen. Evidence of light recreational use was observed at all locations except McCormick and Standard Mine. Depending on the duration of recreation activities, recreators at the mine sites may be exposed to ionizing radiation above the NRC total effective dose equivalent.

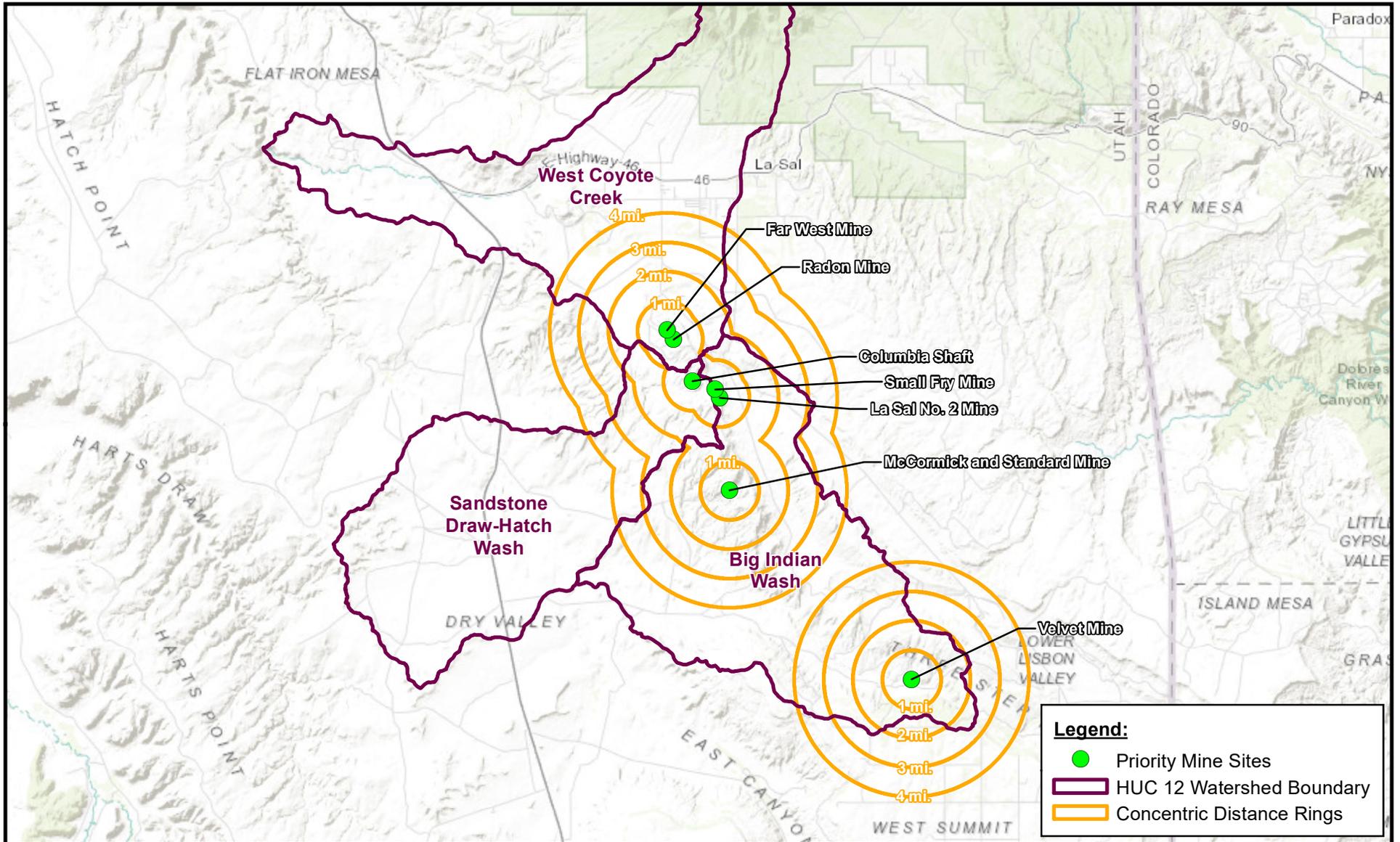
**Table 3. Ionizing radiation survey results**

| Mine Site                     | Ionizing Radiation (µR/hr) |          |                   |                  |
|-------------------------------|----------------------------|----------|-------------------|------------------|
|                               | Background                 | Range    | Mine Site Average | Drainage Average |
| <b>Velvet</b>                 | 40                         | 40 – 350 | 160               | 115              |
| <b>McCormick and Standard</b> | 25                         | 30 – 360 | 161               | 267              |
| <b>Small Fry</b>              | 25                         | 1 – 800  | 252               | 300              |
| <b>La Sal No. 2</b>           | --                         | 20 – 95  | 38                | 95               |
| <b>Columbia Shaft</b>         | 150                        | 75 – 410 | 248               | 254              |
| <b>Radon</b>                  | 85                         | 30 – 440 | 146               | 55               |
| <b>Far West</b>               | 150                        | 40 – 195 | 85                | 60               |

Notes:

- No reading collected
- µR/hr microroentgen per hour

**Section 3: FIGURES**



**Legend:**

- Priority Mine Sites
- HUC 12 Watershed Boundary
- Concentric Distance Rings

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere  
 Projection: Mercator Auxiliary Sphere  
 Datum: WGS 1984

Source:  
 Background: ESRI World Topographic Map (2021)



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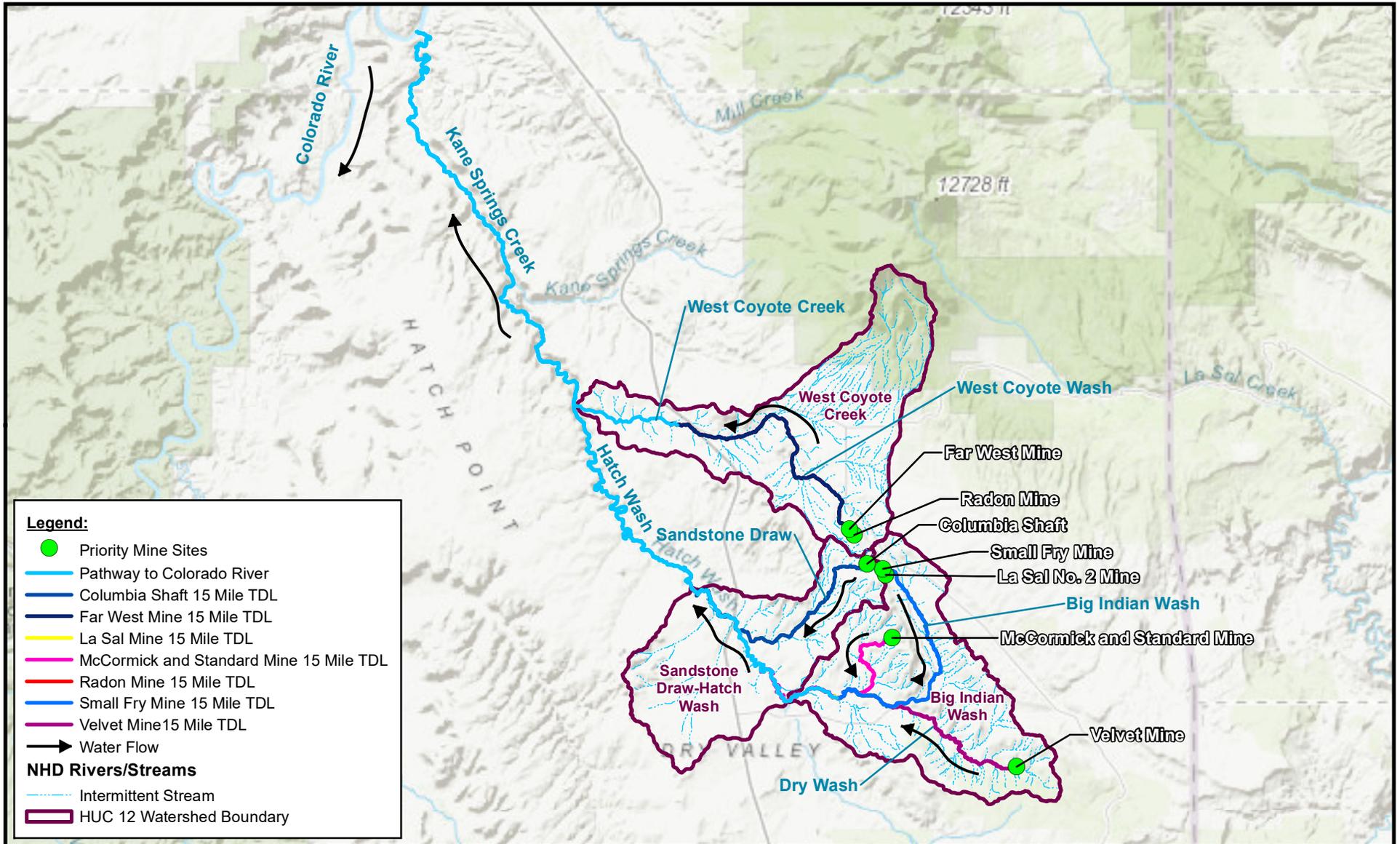
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**FIGURE 1**  
**TRONOX - LISBON VALLEY GROUP**  
**GROUNDWATER WELL SEARCH RADIUS**  
**FOR THE PRIORITY MINE SITES**  
**SAN JUAN COUNTY, UTAH**

Date: 8/4/2021



**Legend:**

- Priority Mine Sites
- Pathway to Colorado River
- Columbia Shaft 15 Mile TDL
- Far West Mine 15 Mile TDL
- La Sal Mine 15 Mile TDL
- McCormick and Standard Mine 15 Mile TDL
- Radon Mine 15 Mile TDL
- Small Fry Mine 15 Mile TDL
- Velvet Mine 15 Mile TDL
- Water Flow
- NHD Rivers/Streams**
- - - Intermittent Stream
- HUC 12 Watershed Boundary

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere  
 Projection: Mercator Auxiliary Sphere  
 Datum: WGS 1984

**Source:**  
 Background: ESRI World Topographic Map (2021)  
 NHD Rivers/Streams: National Hydrography Dataset (2021)  
 TDL: Target Distance Limit



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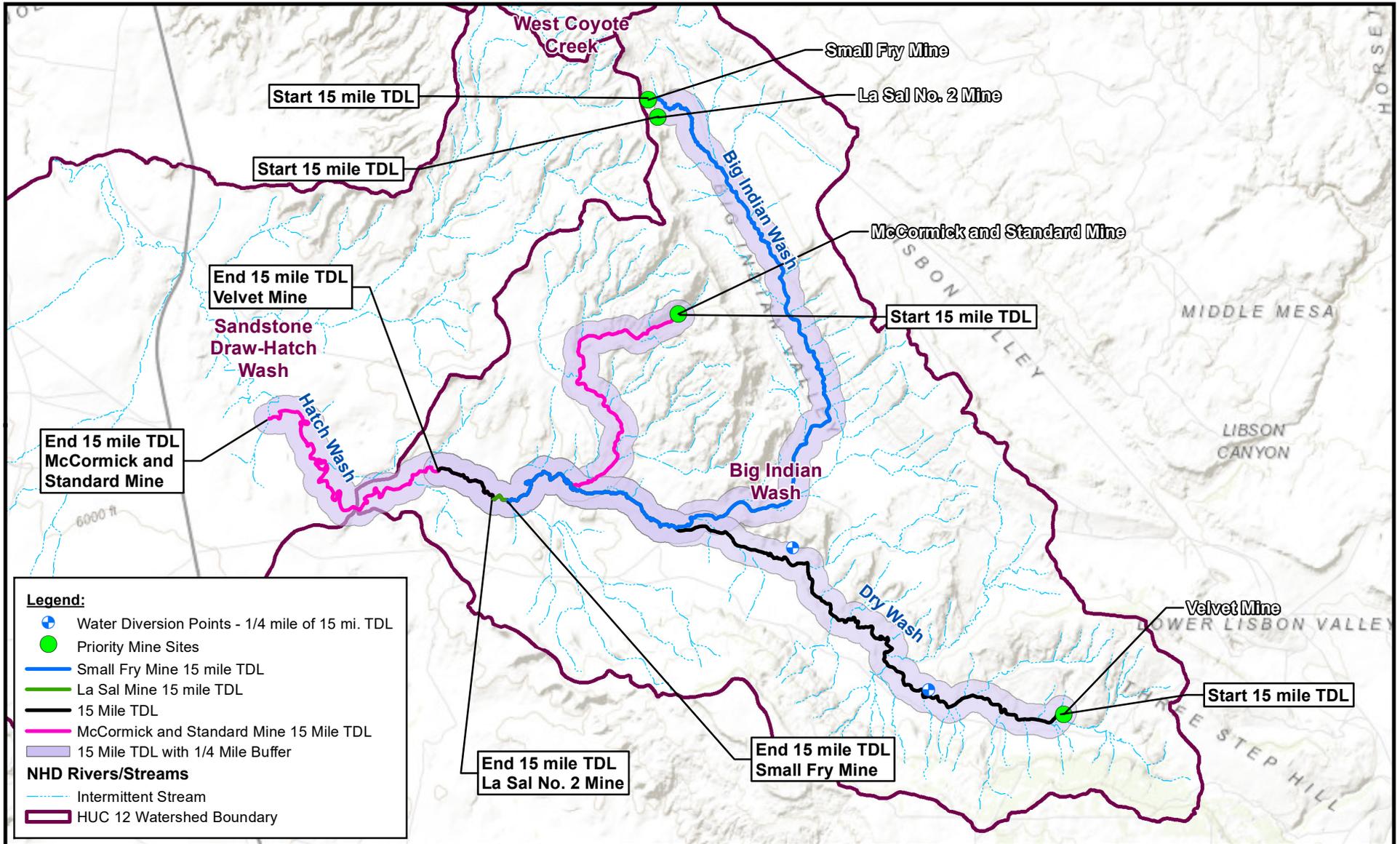
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**FIGURE 2**  
**TRONOX - LISBON VALLEY GROUP**  
**SURFACE WATER PATHWAYS TO**  
**THE COLORADO RIVER**  
**SAN JUAN COUNTY, UTAH**

Date: 8/4/2021



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere  
 Projection: Mercator Auxiliary Sphere  
 Datum: WGS 1984  
 Source:  
 Background: ESRI World Topographic Map (2021)  
 NHD Rivers/Streams: National Hydrography Dataset (2021)  
 TDL: Target Distance Limit  
 Water Diversion Points: Utah Division of Water Rights (2021)



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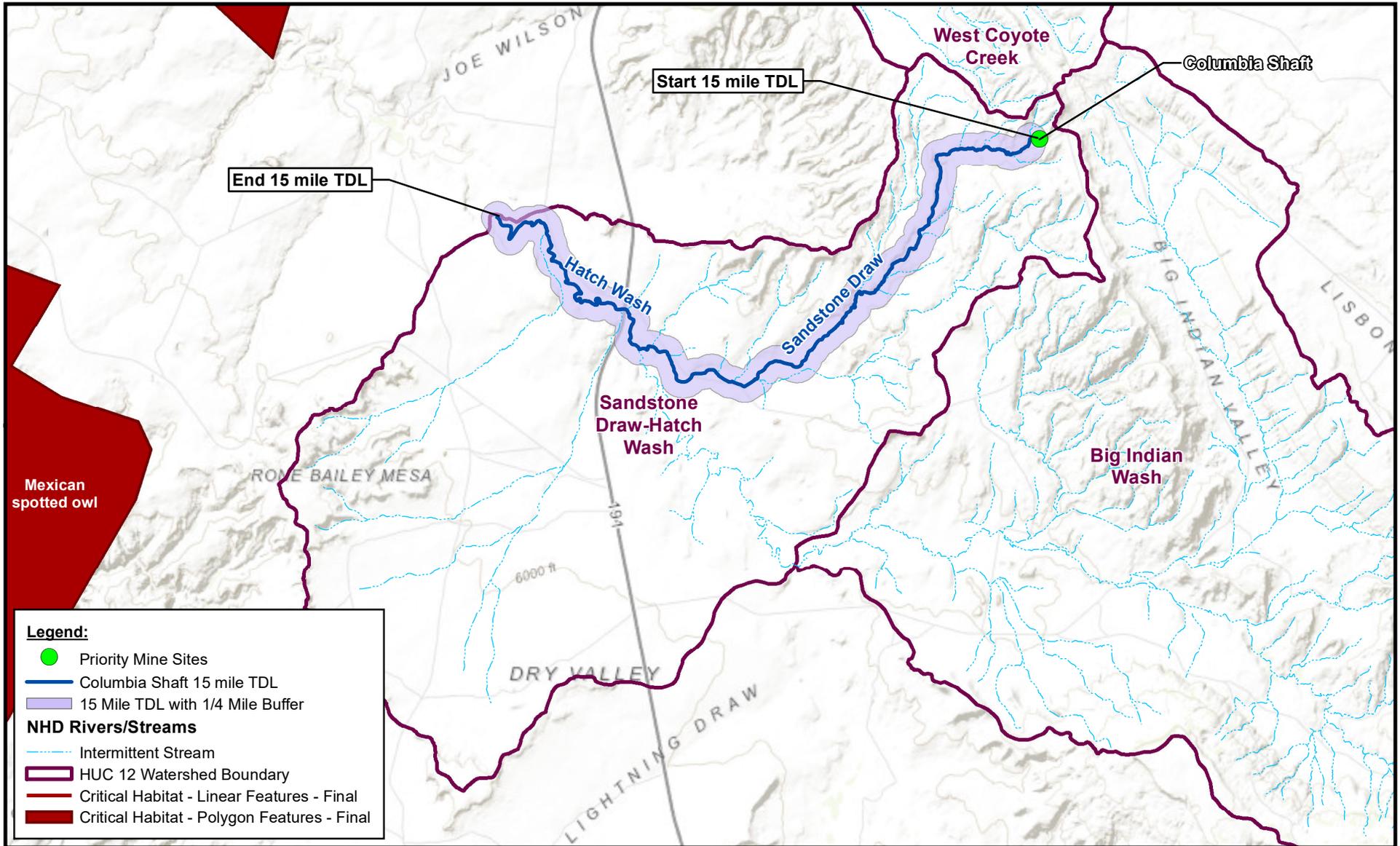
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**FIGURE 3**  
**TRONOX - LISBON VALLEY GROUP**  
**15 MILE TDL FOR THE BIG INDIAN WASH**  
**WATERSHED**  
**SAN JUAN COUNTY, UTAH**

Date: 7/28/2021



**Legend:**

- Priority Mine Sites
  - Columbia Shaft 15 mile TDL
  - 15 Mile TDL with 1/4 Mile Buffer
- NHD Rivers/Streams**
- Intermittent Stream
  - HUC 12 Watershed Boundary
  - Critical Habitat - Linear Features - Final
  - Critical Habitat - Polygon Features - Final

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere  
 Projection: Mercator Auxiliary Sphere  
 Datum: WGS 1984

Source:  
 Background: ESRI World Topographic Map (2021)  
 NHD Rivers/Streams: National Hydrography Dataset (2021)  
 TDL: Target Distance Limit  
 Critical Habitat: US Fish and Wildlife Service (2021)

0 3 6 Miles



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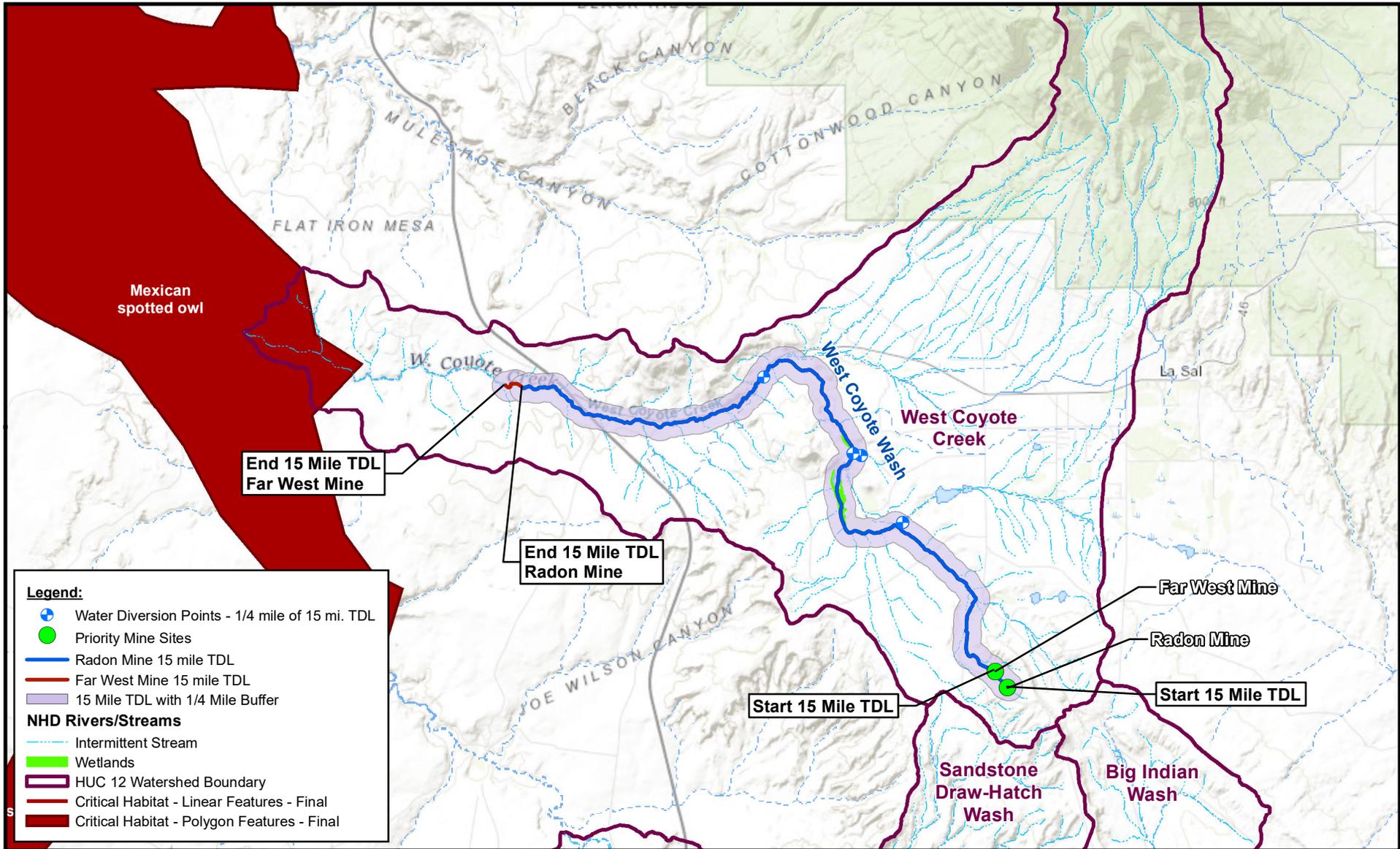
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**FIGURE 4**  
**TRONOX - LISBON VALLEY GROUP**  
**15 MILE TDL FOR THE SANDSTONE DRAW-**  
**HATCH WASH WATERSHED**  
**SAN JUAN COUNTY, UTAH**

Date: 7/28/2021

File: C:\R8\Projects\TRONOX\TRONOX - Lisbon Valley Group\Maps\Lisbon Valley Group 15mi TDL West Coyote Creek.WBD.mxd



**Legend:**

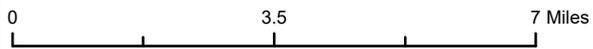
- Water Diversion Points - 1/4 mile of 15 mi. TDL
- Priority Mine Sites
- Radon Mine 15 mile TDL
- Far West Mine 15 mile TDL
- 15 Mile TDL with 1/4 Mile Buffer

**NHD Rivers/Streams**

- Intermittent Stream
- Wetlands
- HUC 12 Watershed Boundary
- Critical Habitat - Linear Features - Final
- Critical Habitat - Polygon Features - Final

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere  
 Projection: Mercator Auxiliary Sphere  
 Datum: WGS 1984

**Source:**  
 Background: ESRI World Topographic Map (2021)  
 NHD Rivers/Streams: National Hydrography Dataset (2021)  
 Wetlands: NWI Wetlands (2020)  
 TDL: Target Distance Limit  
 Critical Habitat: US Fish and Wildlife Service (2021)  
 Water Diversion Points: Utah Division of Water Rights (2021)



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**FIGURE 5**  
**TRONOX - LISBON VALLEY GROUP**  
**15 MILE TDL FOR THE WEST COYOTE CREEK**  
**WATERSHED**  
**SAN JUAN COUNTY, UTAH**

Date: 7/28/2021

## **Section 4: REFERENCES**

National Oceanic and Atmospheric Administration (NOAA). 2021. "Data Tools: 1981-2010 Normals." July 19. <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>

U.S. Environmental Protection Agency (EPA). 2015. Safe Drinking Water Information System.

U.S. Fish and Wildlife Service. 2020. National Wetlands Inventory.

Utah Division of Water Rights. 2021. WRPOD Shapefile – Point of Diversion featureclass.