3.13 UTILITIES

3.13.1 Introduction to Analysis

3.13.1.1 Summary of Results

Approximately 870 utilities were identified within 300 feet of the proposed alignment. Of these, approximately 400 met the criteria for major utilities, including: fiber optic cable; electric transmission lines; treated and recycled water lines; sanitary and storm sewers; high pressure gas lines; petroleum pipelines; overhead and buried electric distribution and telephone lines; and communication towers.

The roadway and transit projects included in the No Action Alternative would likely result in direct, indirect, temporary construction, and cumulative impacts to utilities. The extent of these impacts will be evaluated in the environmental documents being prepared for these projects.

3.13.1.2 Purpose

The purpose of the analysis was to provide information regarding major existing utilities along the proposed alignment. This information would be used during preliminary design of the Preferred Alternative to identify potential conflicts and for future coordination with utility owners during later stages of the project.

3.13.2 Affected Environment

Impacts to existing utilities by transportation projects have the potential to adversely affect the cost and schedule of a project as well as neighboring communities. Utilities that are of a critical nature or are costly and complex to relocate were identified within 300 feet of the proposed alignment and proposed station footprints. Utilities in roadways adjacent to station footprints were also identified.

Certain utilities were classified by the Regional Transportation District (RTD) as “major utilities” based on their critical nature or potential high cost and complexity of relocating them (RTD 2006). These include:

- Brick and clay sanitary sewers
- Communication towers
- Copper telephone cable greater than 200 pair in size
- Electric transmission lines and substations
- Fiber optic lines
- High pressure gas lines
- Oil and gas wells
- Overhead lighting (corresponding electrical feeds)
- Overhead electric and telephone lines
- Petroleum lines
- Sanitary sewers at least 18 inches in diameter
- Sewer lift and water pump stations and meter stations
- Storm sewers at least 36 inches in diameter
- Water lines at least 24 inches in diameter

All telephone lines were considered to meet the criteria for major utilities because information regarding their size was unavailable.

The Utility Notification Center of Colorado database and information from previous investigations including the "Gold Line Commuter Rail – Utilities Inventory and Impact Evaluation Technical Memorandum" (Goodbee 2009a), *US 36 Environmental Impact Statement Major Utility Report* (Goodbee 2004), and the *Longmont Rail Major Existing Utilities Report* (Goodbee 2006) were used for initial identification of private utility companies and municipalities with facilities in the project study area. The identified companies and departments were contacted, and maps or verbal descriptions of the facilities were obtained. Follow-up field reconnaissance and review of topographic maps confirmed the findings and provided additional information.

Most of the major utilities located within 300 feet of the proposed alignment either cross the alignment or run parallel for a short distance. However, three fiber ducts parallel the proposed alignment for a significant distance: one from Denver to Longmont, one from Denver to the City of Boulder, and one through the City of Boulder and Longmont.

3.13.2.1 Description of Major Utilities by Section

Denver Section

59 major utilities were identified in the Denver Section including: fiber optic telecommunication lines, underground electric lines, water mains, storm sewers, and sanitary sewers. Utilities identified in this section are owned by 14 different companies.

Adams Section

In the Adams Section, 66 major utilities were identified, including: buried and overhead communication and electric lines, numerous sanitary and storm sewers, and a water line.

At the proposed South Westminster/71st Avenue Station, 32 major utilities were identified, including: several clay sanitary sewers and buried and overhead electric and communication lines.

Westminster Section

In the Westminster Section, 54 major utilities were identified, including: buried and overhead communication and electric lines, an overhead electric transmission line, several sanitary and storm sewers, and several water lines.

At the proposed Westminster/88th Avenue Station, 18 major utilities were identified, including: a sanitary sewer and buried and overhead electric and communication lines. At the proposed Walnut Creek Station, 11 major utilities were identified, including buried electric and communication lines and a cell phone tower.

Broomfield Section

In the Broomfield Section, 28 major utilities were identified, including: buried and overhead communication and electric lines and several sanitary sewers.

At the proposed Broomfield/116th Avenue Station, 17 major utilities were identified, including: overhead electric lines, buried communication lines, an overhead electric transmission line, and two sanitary sewers. At the proposed Flatiron Station, two major utilities were identified: an overhead electric line and a buried communication line.

Louisville Section
In the Louisville Section, 68 major utilities were identified, including: several buried and overhead communication and electric lines, two petroleum pipelines, four high pressure gas lines, several sanitary and storm sewers, and one water line.

At the proposed Downtown Louisville Station, 47 major utilities were identified, including: numerous sanitary sewers and buried and overhead communication lines, three storm sewers, and a telecommunication main hub.

Boulder Section
In the Boulder Section, 79 major utilities were identified, including: buried and overhead communication and electric lines, five overhead electric transmission lines, six high pressure gas lines going to two regulator stations, several sanitary sewers, two storm sewers and four water lines.

At the proposed East Boulder Station, 17 major utilities were identified, including: three overhead electric transmission lines, buried communication and electric lines, a regulator station and two high pressure gas lines, and a sanitary sewer. At the proposed Boulder Transit Village Station, 21 major utilities were identified, including: buried and overhead communication and electric lines and several sanitary sewers. At the proposed Gunbarrel Station, five major utilities were identified, including: buried communication lines and a buried electric line.

Longmont Section
In the Longmont Section, 56 major utilities were identified, including: numerous buried and overhead communication and electric lines, an electric substation, one buried and four overhead electric transmission lines, two high pressure gas lines, two gas gathering pipelines, several sanitary and storm sewers, and one water line.

At the proposed Twin Peaks Station, three major utilities were identified including: two buried communication lines and one buried electric line. At the proposed Downtown Longmont Station, 34 major utilities were identified, including: buried and overhead communication and electric lines, one buried and two overhead electric transmission lines, and several sanitary and storm sewers.

3.13.3 Impact Evaluation

3.13.3.1 Methodology

Potential utility conflicts were identified by comparing the impact footprint with the estimated locations of utilities. It is expected that many potential impacts would be eliminated as design advances and when potholing, utility locates, and meetings with utility owners provide additional information.

This evaluation resulted in one of three determinations:

- **Relocation:** The utility would need to be moved horizontally and/or vertically to maintain adequate clearance and avoid conflict. Utilities within the proposed alignment's impact footprint that cross under the existing tracks or that parallel the existing tracks within the

BNSF Railway Company right-of-way were identified as relocations. Overhead lines within proposed station footprints were also identified as relocations.

- **Adjustment:** The utility would be affected by the No Action Alternative or Preferred Alternative but no relocation would be required. Actions considered adjustments include: lengthening pipe or culvert; raising, lowering, or moving manholes or valves; moving inlets and associated piping; extending or adding protective casing; and moving fire hydrants. Utilities that encroach upon the proposed alignment's impact footprint but do not cross or run parallel to the existing tracks were considered to be adjustments. Buried lines within proposed station footprints were also considered to be adjustments as it was assumed that there would be minimal grade change and no structures except for platforms at the stations.
- **No Action Required:** The utility would not be affected by the No Action Alternative or Preferred Alternative. It was assumed that utilities outside the proposed alignment's impact footprint would not require any action. Utilities within the proposed alignment and stations footprint that are neither relocations nor adjustments and would also not require any action. These utilities would remain in place as they are currently situated.

Both relocations and adjustments for the proposed alignment and proposed stations were evaluated because it is possible that disruption in service or endangerment to human health and the environment from rupture would result during either action.

Impacts are broken down into the following categories:

1. **NWR Corridor Alignment** – Impacts to utilities that would result from the project north of the South Westminster/71st Avenue Station to Longmont.

2. **Proposed Stations** – Impacts to utilities that would result from the proposed station platforms and associated park-n-Rides. Both funded and unfunded stations are included in the impact analysis. Impacts associated with the South Westminster/71st Avenue Station are included in Phase 1, because this station would be constructed as part of Phase 1.

3. **Phase 1** – Impacts to utilities that would result from the project between Denver Union Station (DUS) and the South Westminster/71st Avenue Station. Phase 1 would be constructed first, as part of RTD's Eagle P3 project.

3.13.3.2 Results

No Action Alternative

The No Action Alternative assumes that existing and committed improvements, as defined in Chapter 2.0, Alternatives Considered, would be implemented by others as planned.

Direct, Indirect, Temporary Construction, and Cumulative Impacts

The roadway and transit projects included in the No Action Alternative would likely result in direct, indirect, temporary construction, and cumulative impacts to utilities. The extent of these impacts will be evaluated in the environmental documents being prepared for these projects.

Preferred Alternative

Direct Impacts

Major utilities that may need to be relocated as a result of the development of the Preferred Alternative are distributed throughout the proposed alignment. It is expected that all utility impacts would be short-term, addressed prior to or during construction by relocation or adjustment, and that there would be no indirect or long-term impacts. Table 3.13-1 summarizes the number of potential conflicts with major utilities and shows that utility relocations and adjustments are associated with the Preferred Alternative.

TABLE 3.13-1. SUMMARY OF POTENTIAL CONFLICTS WITH EXISTING UTILITIES

Section/Station	Number of Major Utilities in Footprint	Number of Potential Utility Conflicts	
		Relocations	Adjustments
NWR Corridor Alignment			
Denver Section	Discussion of the Denver Section is included under Phase 1.		
Adams Section	35	30	5
Westminster Section	44	39	5
Broomfield Section	21	18	3
Louisville Section	51	47	4
Boulder Section	76	68	8
Longmont Section	36	33	3
Total	**263**	**235**	**28**
Proposed Stations			
South Westminster/71st Avenue	Discussion of this station is included under Phase 1.		
Westminster/88th Avenue	5	0	5
Walnut Creek	6	0	6
Broomfield/116th Avenue	5	1	4
Flatiron	0	0	0
Downtown Louisville	16	8	8
East Boulder	7	4	3
Boulder Transit Village	16	4	12
Gunbarrel	1	0	1
Twin Peaks	3	0	3
Downtown Longmont	18	2	16
Total	**77**	**19**	**58**
Phase 1			
Denver Section	59	37	0
Adams Section	27	20	7
South Westminster/71st Avenue	13	1	12
Total	**99**	**58**	**19**

Source: Gooddbee 2009a and NWR Corridor Project Team, 2009.
Notes:
Data from the "Gold Line Commuter Rail – Utilities Inventory and Impact Statement Major Utility Report" Technical Memorandum (Goodbee, 2009a) was used for Denver Section and portions of the Adams Section.
Does not take into account implementing mitigation measures that may eliminate a conflict or may allow for an adjustment instead of relocation. Specific mitigation measures would be addressed during later stages of design.
Considers more than one distinct (physically-separated) conflict on a single utility as a separate relocation or adjustment.
Utilities present in more than one section are counted separately.

NWR Corridor Alignment

Within the NWR Corridor Alignment's impact footprint between the South Westminster/71st Avenue Station, 263 major utilities were identified. Of these, 235 were identified as potential relocations and 28 were identified as potential adjustments. Table 3.13-2 summarizes the potential utility impacts for each project section in the NWR Corridor Alignment.

TABLE 3.13-2. SUMMARY OF DIRECT IMPACTS TO EXISTING UTILITIES NWR CORRIDOR ALIGNMENT

Section	Utility Type	Relocation	Adjustment
Denver Section	Discussion of the Denver Section is included under Phase 1.		
Adams Section[1]	Communication	11	0
	Electric	7	0
	Sanitary Sewer	8	3
	Storm Sewer	4	2
Westminster Section	Communication	12	0
	Electric	5	0
	Electric Transmission	1	0
	Sanitary Sewer	5	1
	Storm Sewer	5	4
	Water	11	0
Broomfield Section	Communication	6	3
	Electric	5	0
	Electric Transmission	1	0
	Sanitary Sewer	6	0
Louisville Section	Communication	24	0
	Electric	8	0
	Gas	6	0
	Sanitary Sewer	6	3
	Storm Sewer	2	1
	Water	1	0
Boulder Section	Communication	41	1
	Electric	5	0
	Electric Transmission	4	0
	Gas	4	2
	Sanitary Sewer	11	2
	Storm Sewer	2	0
	Water	1	3
Longmont Section	Communication	15	2
	Electric	5	1
	Electric Transmission	5	0
	Gas	4	0
	Sanitary Sewer	3	0
	Water	1	0

Source: Goodbee, 2009b.
Notes:
[1] Alignment impacts from DUS to the South Westminster/71st Avenue Station are included under Phase 1.Utilities in more than one section counted more than once.
Utility types not shown for a particular section have no relocations or adjustments in that section.

Proposed Stations

A total of 77 major utilities were identified within the station impact areas, including: 19 requiring relocation and 58 adjustments. Table 3.13-3 summarizes the potential utility impacts for proposed stations.

TABLE 3.13-3. SUMMARY OF DIRECT IMPACTS TO EXISTING UTILITIES AT PROPOSED STATIONS

Station	Utility Type	Relocation	Adjustment
South Westminster/ 71st Avenue Station	Impacts associated with the South Westminster/71st Avenue Station are included under Phase 1.		
Westminster/88th Avenue Station	Communication	0	2
	Electric	0	3
Walnut Creek Station	Communication	0	4
	Electric	0	2
Broomfield/116th Avenue Station	Communication	0	3
	Electric	1	0
	Sanitary Sewer	0	1
Flatiron Station	All Utility Types	0	0
Downtown Louisville Station	Communication	6	2
	Electric	2	0
	Sanitary Sewer	0	4
	Storm Sewer	0	2
East Boulder Station	Communication	1	1
	Electric	0	1
	Electric Transmission	3	0
	Gas	0	1
Boulder Transit Village Station	Communication	3	7
	Electric	1	2
	Sanitary Sewer	0	3
Gunbarrel Station	Electric	0	1
Twin Peaks Station	Communication	0	2
	Electric	0	1
Downtown Longmont Station	Communication	0	11
	Electric	0	2
	Electric Transmission	2	0
	Sanitary Sewer	0	2
	Storm Sewer	0	1

Source: Goodbee, 2009b.
Notes:
Utility types not shown for a particular station have no relocations or adjustments at that station.

Phase 1

Implementation of Phase 1 between DUS and the South Westminster/71st Avenue Station would result in 58 potential utility relocations and 19 adjustments as shown in Table 3.13-4.

TABLE 3.13-4. SUMMARY OF DIRECT IMPACTS TO EXISTING UTILITIES - PHASE 1

Section/Station	Utility Type	Relocations	Adjustments
Denver Section	Communication	18	0
	Electric	2	0
	Electric Transmission	3	0
	Sanitary	4	0
	Storm	9	0
	Water	1	0
Adams Section	Communication	10	0
	Electric	1	0
	Sanitary	7	6
	Storm	1	1
	Water	1	0
South Westminster/ 71st Avenue Station	Communication	0	3
	Electric	1	4
	Sanitary	0	5

Source: Goodbee, 2009b.
Notes:
Utility types not shown for a particular station have no relocations or adjustments at that station.

Indirect Impacts

There would be an increase in the amount of impervious surfaces throughout the project study area as a result of the parking lots and parking structures that would be constructed at each station location. The volume of storm runoff would increase because water would be unable to saturate into the ground, causing more runoff and drainage issues. Therefore, additional storm sewers may need to be installed. In addition, increases in population related to transit-oriented development would probably require more utilities near stations.

Temporary Construction Impacts

All of the direct utility impacts discussed above are temporary construction impacts. Because the engineering of the Preferred Alternative is not complete, the affects on utilities can only be generally described. Some utilities would be relocated during construction, while others may be relocated prior to construction, assuming good coordination with utility owners. Although utility relocations and adjustments are typically a cost issue, temporary disruptions to service may affect local residences and businesses.

Cumulative Impacts

The proposed development of the areas adjacent to the proposed NWR Corridor project would require the extension, augmentation, or modification of utilities. In response to increased development and population growth, new utilities would be built and existing utilities would be replaced and improved, regardless of which transportation or private sector projects occur. Overall, the Preferred Alternative would not result in significant long-term secondary or cumulative adverse impacts on utilities.

3.13.4 Mitigation Measures

More detailed information regarding utility locations will be provided during the locating, surveying, and potholing efforts as part of future design phases. It is anticipated that many utility impacts will be mitigated through close coordination with the utility companies and municipalities during design and construction.

Mitigation techniques to reduce identified impacts to utilities are described in Table 3.13-5.

TABLE 3.13-5. PROPOSED MITIGATION MEASURES - UTILITIES

Impact	Impact Type	Mitigation Measures
Relocation of electric transmission towers	Construction	• Schedule construction during period of low use (October to April). • Modify design to avoid/minimize conflict.
Adjustment or relocation of high pressure gas line(s)	Construction	• Schedule construction during period of lower use (May to September). • Modify design to avoid/minimize conflict. • Protect in place.
Adjustment or relocation of buried fiber optic	Construction	• Early coordination with utility owners. • Modify design to avoid/minimize conflict. • Protect in place. • Obtain variance to minimum depth requirement.
Adjustment or relocation of water lines and sanitary sewers	Construction	• Modify design to avoid conflict. • Schedule disruption of service for low use period. • Minimize disruption of service to water lines.
New roadway or additional/reduced cover on buried utilities	Construction	• Add encasement or protective cover over utilities (protect in place).
Relocation of overhead telephone and electric distribution lines	Construction	• Early coordination with utility owners.

Source: NWR Corridor Project Team, 2009.

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